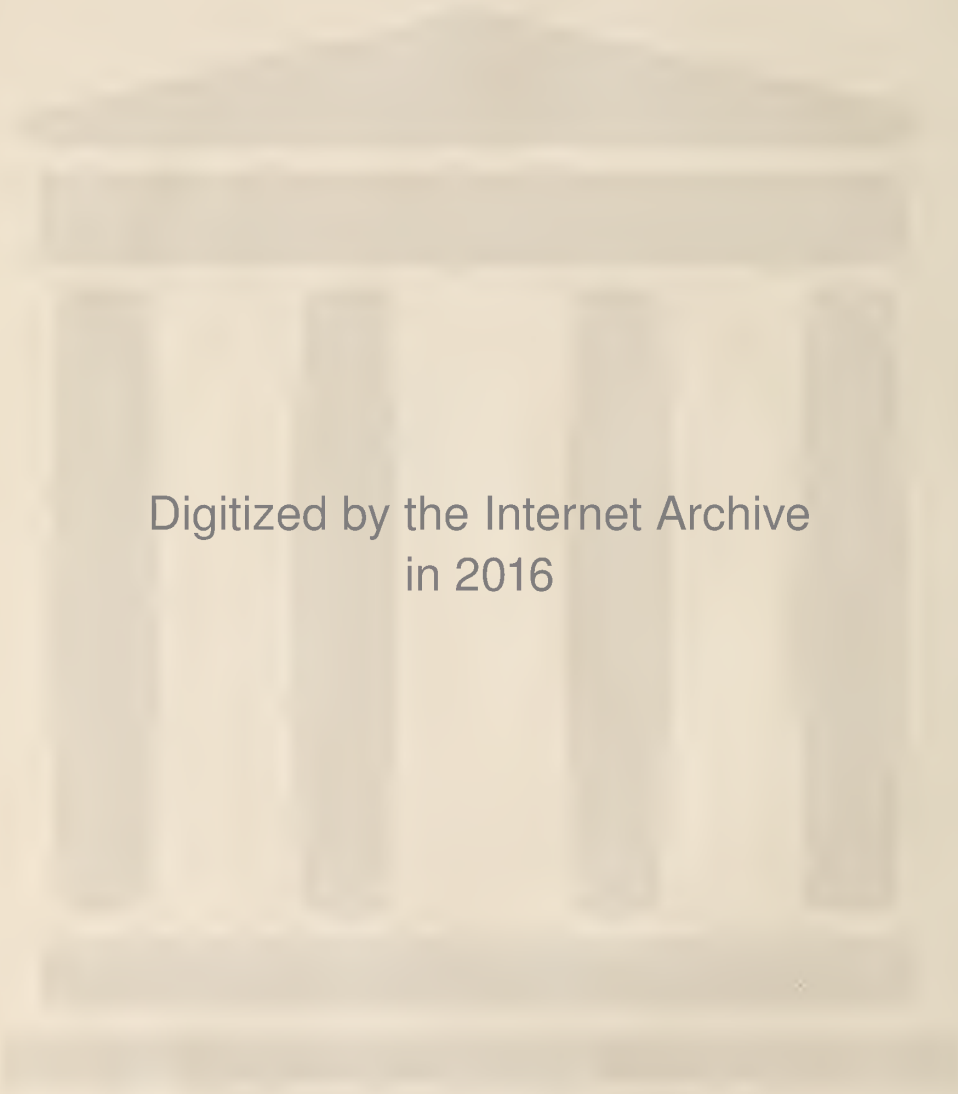
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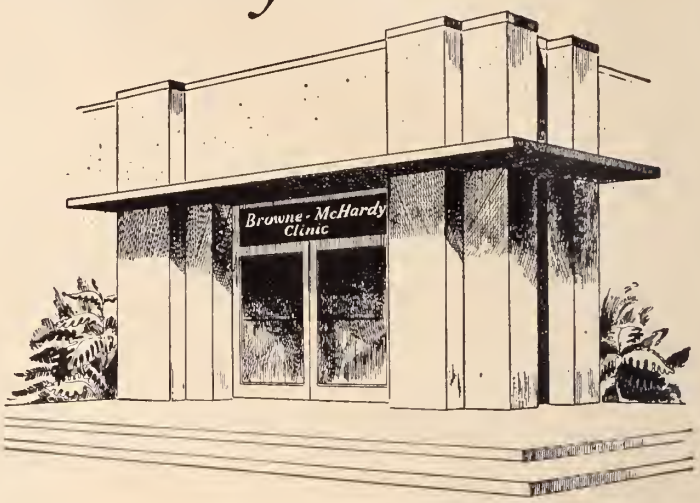
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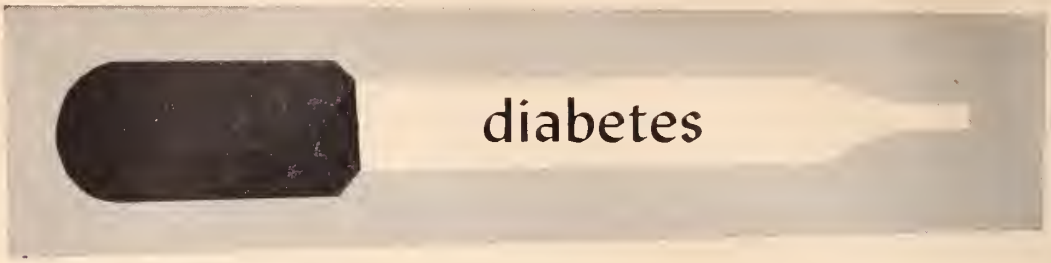
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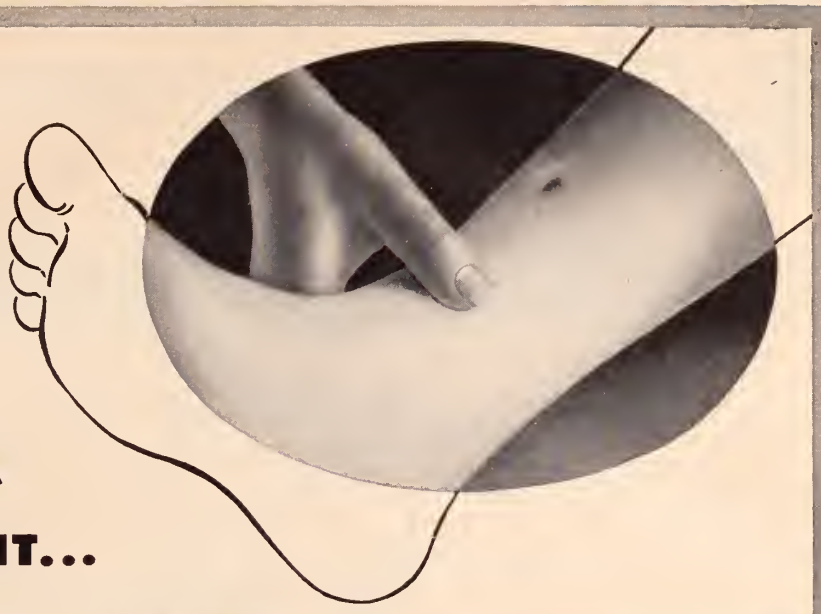
70% were over 40.
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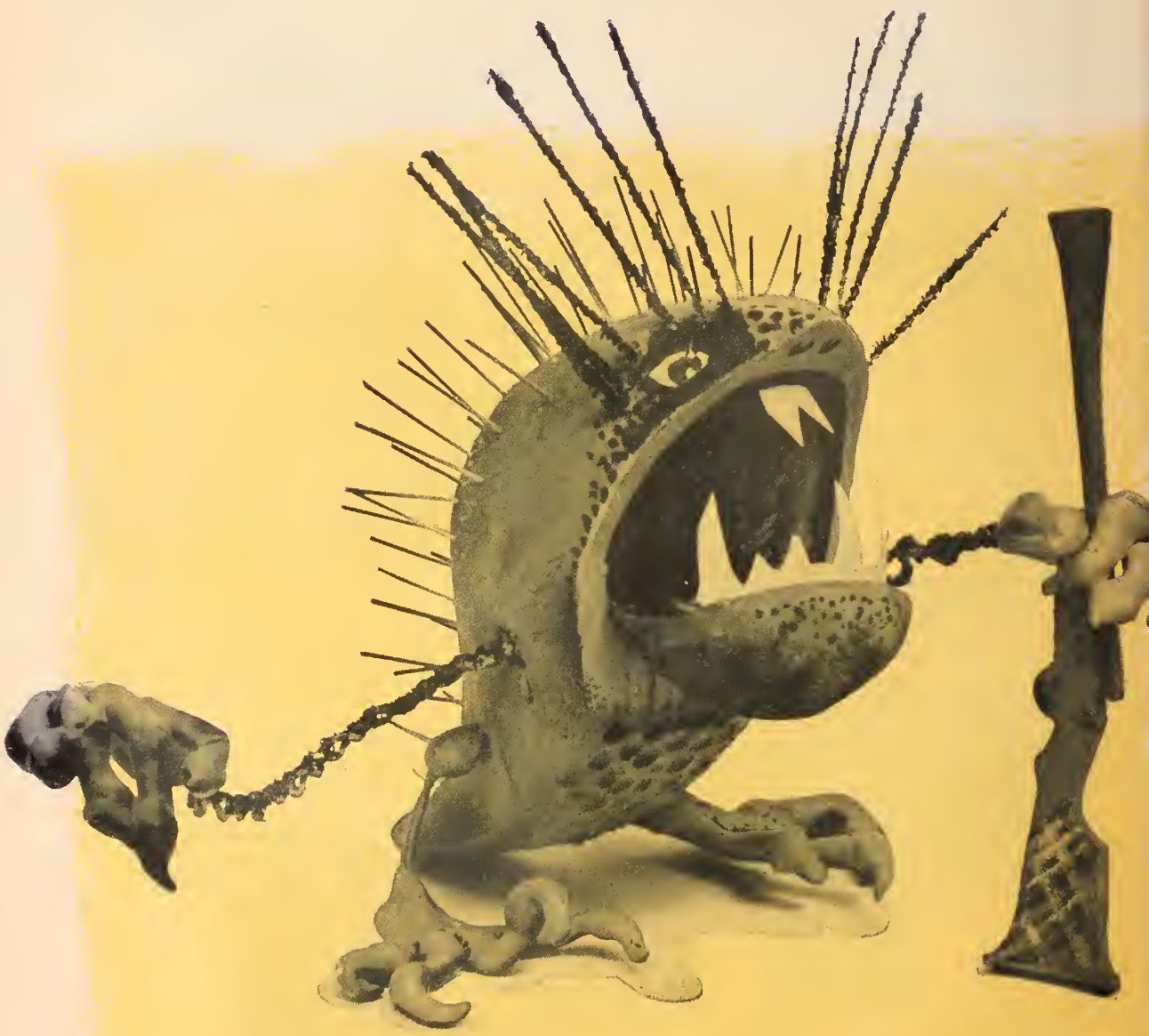
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MULTIPLE MYELOMA; REPORT OF 51 CASES; SOME OBSERVATIONS WITH URETHANE THERAPY *

RICHARD D. HAINES, †, M. D.
W. N. POWELL, ‡, M. D.
TEMPLE, TEXAS

This report concerns 51 cases of histologically proved multiple myeloma seen at the Scott and White Clinic since 1930. It is actually divided into two phases: (1) statistical data related to this group of patients, and (2) observations of the results of long-continued urethane therapy.

STATISTICAL DATA

Incidence: Only in recent years has the diagnosis of multiple myeloma been made with frequency and accuracy. This is probably due to an increased awareness of the entity,[1] plus more detailed clinical studies, including bone marrow aspirations.

Sex: Thirty-eight, or 75 per cent, of our 51 patients were men, including one negro; while 13, or 25 per cent, were women.

Age: The age range for this series was from 41 to 76 years, the average age being 57 years. Although all of our patients were over 40 years of age, there are a number of reports in the literature dealing with multiple myeloma in younger age groups.[2-4] The youngest patient reported was a child, 18 months old.[5]

Signs and Symptoms: The actual mode of onset of this disease is obscure. The symptoms are variable; and usually, patients note the occurrence of multiple, simultaneous initial complaints. In our series, pain and weakness were the two most frequent symptoms. Other common complaints concerned gastrointestinal alterations. (See Table 1). Two patients had generalized purpura as their presenting symptom. One patient came to the Clinic because of generalized lymphadenopathy, tentatively diagnosied as Hodgkin's disease. Only one patient noted a single palpable tumor, located in the right clavicle in this instance, as the first sign. Three patients had sudden dramatic onset of back distress indistinguishable from acute herniated lumbar disc. These facts are mentioned to emphasize one point—multiple myeloma has a myriad of manifestations, and may be confused with other diseases; therefore, a high index of suspicion is necessary for differential diagnosis.

TABLE 1

FREQUENCY OF
INITIAL SYMPTOMS IN MULTIPLE MYELOMA

Symptom	No. Patients	Symptom	No. Patients
Pain		Miscellaneous	
Back	27	Weakness	15
Chest	5	Dyspnea	3
Abdomen	5	Epistaxis	2
Knee	1	Purpura	2
Head	3	Dermatitis	1
Hands	1	Chills and fever	5
Wrists	1	Weight loss	4
Ankles	1	Lymphadenopathy	1
Gastrointestinal		Drainage from nose	1
Anorexia	6		
Vomiting	7		
Nausea	2		
Diarrhea	2		

Duration of Symptoms: Symptoms of our patients had been present from one week to thirty-three months prior to admission. Twenty-eight patients reported

* Presented at the Alumni Meeting, University of Rochester, School of Medicine, Rochester, New York, October 23, 1953.

From the Department of Internal Medicine † and from the Department of Clinical Pathology ‡ of the Scott and White Clinic, Temple, Texas.

within six months after onset of their symptoms, and 10 more patients reported within the next six months; hence 39 patients reported within one year after onset of the first symptom.

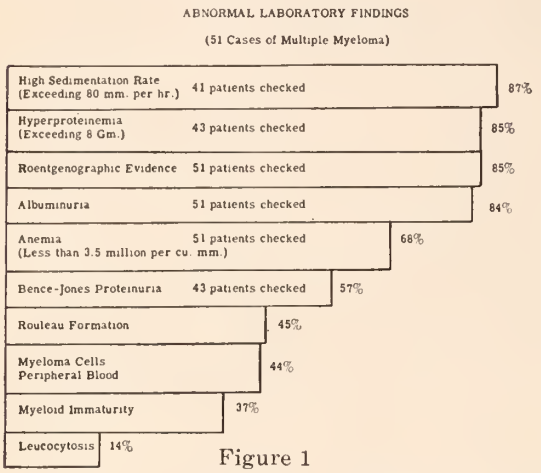


Figure 1

Laboratory Findings: Figure 1 summarizes the important abnormal laboratory findings for our series of 51 cases of multiple myeloma.

The *erythrocyte sedimentation rate* was determined in 41 instances. In 87 per cent of these cases, it exceeded 80 mm. per hour, (uncorrected) Westergren method. This was the most frequent abnormal laboratory finding. The highest recorded rate was 165 mm. per hour.

Total serum protein ranged from 5.2 to 14.0 Gm. per 100 ml., and exceeded 8 Gm. per 100 ml. in 85 per cent of 43 patients checked. The cause of this *hyperproteinemia* is still undetermined. The increase is generally due to the globulin fraction, and the A/G ratio is reversed. A number of our patients had a total albumin level well below 1 Gm. per 100 ml., with a globulin level exceeding 9 or 10 Gm. per 100 ml. The albumin globulin ratio was reversed in 70 per cent of these cases. One determination of Bence-Jones protein in the blood was made and found to be 3.1 Gm. per 100 ml. Cryoglobulinemia was not found in 5 patients recently checked. Twenty-four patients with hyperproteinemia had *multiple skeletal lesions*, demonstrated roentgenographically.

Forty-five patients had *albuminuria*. This finding, with the above three, constituted the four most common laboratory findings.

Anemia was also a common finding, being recorded below 3.5 million per cu. mm. in 68 per cent of our cases. Anemia, however, is not essential for diagnosis. In fact, multiple myeloma has been reported in association with polycythemia rubra vera.[6]

It has been said that *Bence-Jones proteinuria* is rarely found in patients with hyperproteinemia; however, Bayrd and Heck[1] found that 56 per cent of their patients with hyperproteinemia also had Bence-Jones proteinuria. Of 43 patients tested in our series, 57 per cent had Bence-Jones proteinuria. Twenty-six patients having hyperproteinemia were checked for Bence-Jones protein, and 50 per cent, 13 patients, had positive results. We have not detected a fall in the protein in the late stages of the disease. To our knowledge, elevated spinal fluid protein has been reported in only one case of multiple myeloma.[7]

In our series, the relationship of albuminuria, Bence-Jones proteinuria and azotemia suggests that Bence-Jones proteinuria may be present in a higher percentage of cases with increasing albuminuria.

Rouleau formation was first stressed by Reimann,[8] and he believed hyperproteinemia was responsible for this phenomenon. In our series, rouleau formation was seen in 23 patients, 45 per cent; however, total protein in excess of 8 Gm. per 100 ml. was found in only 17 of these patients.

Myeloma cells in peripheral blood smears were seen in 44 per cent of our cases. This was usually a single examination, and a prolonged search may be necessary. In patients with leucopenia, myeloma cells have been found in buffy coat preparations when they were not detected in ordinary smears.

Myeloid immaturity in peripheral blood smears was seen in 37 per cent of cases. At times, immaturity to the stem cell was observed.

In our experience, *leucocytosis* is unusual. Only 14 per cent, 7 patients, had a total white blood cell count exceeding 10,000 per cu. mm.

Roentgenographic Findings: Typical roentgenographic findings in multiple myeloma consist of discrete multiple osteolytic lesions. When found, they should arouse suspicion of the disease and further diagnostic measures should be employed to exclude or prove its presence. Not all of our patients had complete skeletal roentgenograms, but roentgenographically demonstrable skeletal lesions were found in 85 per cent of our cases. Table 2 outlines the location of demonstrable lesions. The skull, vertebrae, and ribs were the most commonly involved sites. Pathological fractures were observed in 9 instances.

TABLE 2

FREQUENCY AND LOCATION OF ROENTGENOGRAPHIC LESIONS IN MULTIPLE MYELOMA

Bones Involved	No. Patients	Percentage
Skull	24	47
Vertebra (9 had pathological fractures)	24	47
Rib	21	41
Pelvis	8	15
Femur	6	11
Humerus	4	8
Scapula	2	4
Clavicle	2	4
Radius	1	2
Ulna	1	2
Foot (generalized)	1	2
Osteoporosis only	5	10
Negative roentgenograms	5	10

The lesions can be classified into three types: (1) multiple discrete osteolytic lesions (punched-out type), (2) solitary osteolytic lesions, and (3) osteoporosis only. Diffuse osteoporosis was seen five times, or in 10 per cent of our cases. Five patients had generalized skeletal films exposed after the diagnosis of multiple myeloma was established by other means, and no roentgenographic evidence could be detected. In 10 per cent of our cases, the diagnosis would have been overlooked if roentgenograms had been the only diagnostic test employed.

Differential Diagnosis: For diagnosis, it must be remembered that the onset of symptoms in multiple myeloma may be insidious or dramatic. No single test is consistently diagnostic—not even bone marrow aspiration; however, application of groups of tests will lead to diagnostic consideration and final diagnosis. Occasionally, open biopsy of a tumor will be necessary.

OBSERVATIONS OF CONTINUED URETHANE

For years, x-ray and supportive measures were the only therapy available. Irradiation had no effect on the ultimate outcome of the patient with multiple myeloma; and only occasionally, afforded some symptomatic relief. Coley,[9] in 1931, reported beneficial results with the use of the toxins of erysipelas and *B. prodigiosus* combined in some instances with irradiation. His good results were not confirmed by other observers.

The advent of modern chemotherapy has dispelled to some extent our former feeling of hopelessness regarding the treatment of multiple myeloma. The first real advance in treatment was reported by Snapper and Schneid,[10] when they recorded their experiences with stilbamidine. Later, Snapper [11] introduced the use of pentamidine. In these reports, the occurrence of large inclusion bodies of ribonucleic acid within the myeloma cells was noted—evidence that the drug employed had some selective affinity for the cells of this tumor.

Our own experience with intermittent intramuscular injections of stilbamidine has been in accord with that of others. While there was often some relief of pain, there was no decrease in the number of myeloma cells in the marrow or alteration in the roentgenographic appearance of the involved bones. The results with pentamidine are said to be similar to those with stilbamidine.

Rubinstein[12] introduced antimony (neostibosan (R)) on the same theoretical basis that Snapper first used stilbamidine. He reported results similar to those secured by Snapper with stilbamidine. Rubinstein believed there was a quantitative decrease in the myeloma cells in the mar-

row, but found that neostibosan produced an increase in the radiosensitivity of the tumor. In a later article,[13] he reported a favorable effect on the control of epistaxis, a reduction in hyperglobulinemia, and a regression of palpable tumors when neostibosan was used alone. He did not state whether there was roentgenologic change in the bone underlying these regressing tumor masses.

Jacobson and others[14] treated two patients having multiple myeloma with nitrogen mustard, but failed to obtain any beneficial results.

Unfortunately, to date, we have had no experience with radioactive isotopes in the therapy of multiple myeloma as reported by Lawrence, et alii.[15]

Bayrd and Hall[16] reported a case of plasma cell leukemia. The patient was treated with a total of 6,135 microcuries of P^{32}. Twenty-one months later, they were unable to detect any evidence of the disease—including a normal sternal marrow examination. To our knowledge, this more closely approximates a "cure" than any other reported case.

During the past three years, we have treated 13 patients with urethane for varying periods of time. Three cases are interesting from many standpoints. (Other cases were not followed long enough to be of statistical importance.)

The modus operandi by which urethane suppresses mitosis is still obscure. At present, two concepts of its mode of action exist: (1) that it is an actual cellular antagonist, and (2) that is is a competitive inhibitor to the utilization of a naturally occurring amine essential to nuclear protein synthesis. In the body, urethane is hydrolyzed to carbon dioxide, ethyl alcohol, and ammonia within twenty-four hours.[17]

CASE REPORTS

Case No. 1. A 57-year-old railroad employee was first seen at the Santa Fe Hospital in April, 1950. For three months, he had noted dull, aching, intermittent, nonradiating pain in the mid-cervical verterbral area. His immediate need for this initial hospitalization was a dramatic exacerbation of cervical vertebral pain with radiation into the occiput. There was no history of trauma.

Physical examination revealed this patient to be a well developed and well nourished man who held his neck in a rigid position. There was tenderness over the transverse process of the third and fourth cervical vertebrae with associated moderate muscle spasm of the left posterior cervical musculature.

TABLE 3

MULTIPLE MYELOMA TREATED WITH URETHANE
2 Grams Daily for 3 Years

Tests	4-3-50	8-21-50	1-18-51	8-7-52	3-5-53
Hemoglobin (Gm. per 100 cc.)	14.0	15.0	15.0	13.5	14.0
RBC (million per cu. mm.)	4.7	4.6	5.1	4.7	4.9
WBC (per cu. mm.)	9,050	6,200	4,400	7,000	6,600
Total Protein (Gm. per 100 cc.)	7.8	7.2	6.9	---	7.32
Albumin (Gm. per 100 cc.)	3.3	3.1	3.8	---	3.04
Globulin (Gm. per 100 cc.)	4.5	4.1	3.1	---	4.28
Phosphorus (mg. per 100 cc.)	4.5	---	4.3	---	---
Calcium (mg. per 100 cc.)	9.3	---	10.1	---	10.2
Blood Morphology	No myeloma cells				
Bence-Jones Proteinuria	Absent				
Bone Marrow	Positive for myeloma cells				
Biopsy Lesion, Calvarium	Positive for myeloma cells				

Laboratory studies on admission and during a three year follow-up period are tabulated in Table 3. A roentgenogram of the cervical spine showed narrowing of the third cervical vertebral body with the appearance of an osteolytic destructive process. Sternal aspiration two days after admission showed the presence of myeloma cells. The patient, therefore, was placed on urethane therapy.

This case illustrates several interesting features concerning the diagnosis of multiple myeloma. It is an example of advanced complicated multiple myeloma, presence of fracture, without the other usual findings of anemia, elevated sedimentation rate, albuminuria, Bence-Jones proteinuria, hypercalcemia, or morphological alteration in peripheral blood smears. The reversal of the albumin globulin ratio, seen initially, showed a gradual return to more normal values with therapy; however, this has not been maintained.

After eight months of urethane therapy, there was definite change in the fragmented third cervical vertebral body with recalcification and disappearance of the fracture lines. In our series of 51 patients treated with various therapeutic agents, this phenomenon was observed twice. The other instance occurred during ACTH therapy. (We were treating a patient with ACTH when a spontaneous fracture of the humerus calcified.)

Bone marrow aspirations revealed no significant alterations in either the number of myeloma

cells present or their morphologic characteristic. Approximately five weeks after urethane therapy was instituted, this patient experienced marked subjective relief from his bone pain. Improvement has been gradual, and the patient has returned to his usual occupation as a railroad employee. We would classify this as an excellent response to treatment.

The above mentioned roentgenographic change attributed to urethane therapy is unusual, and its direct relationship to treatment is debatable. As late as 1946, the consensus of various British authorities[18-21] was that multiple myeloma was an osteolytic process in bone without the potentiality of new bone formation. Since then, a few reports have appeared to invalidate the old opinion. Garland and Kennedy [22] presented roentgenographic evidence of healing in a pathologic fracture of the left femur when treated with x-ray irradiation. Krainin[23] reported an interesting case of multiple myeloma in which there was histologic evidence of new bone formation without treatment. He speculated that the periosteum was its site of origin. Recently, Dameshek,[24] as well as Loge and Rundles,[25] have presented roentgenographic evidence of recalcification in bone lesions of multiple myeloma.

Case No. 2. The patient was first seen in July, 1949. She was a 49 year old housewife, whose chief complaint was "arthritis" of thirty-three months' duration. Initially, her distress was compatible with that of a herniated disc; insofar as she experienced right sciatic pain, but this was constant. Also, she soon noted an onset of generalized skeletal pain, aggravated by motion of the spine. She had been aware of a gradual reduction in height calculated to be 6 inches in thirty-three months. Severe thoracic kyphosis had developed. The patient had been in bed at home for ten months prior to her first visit. She was totally incapacitated, unable to sit up or even flex her head without help while in recumbent position, and when erect her head would fall forward. The patient presented herself as a poorly nourished woman, alert mentally, with essential physical findings as listed:

1. Kyphosis with scoliosis of the lumbar spine, inability to extend the head without support.
2. Exquisite bone pain to minimal pressure or percussion when applied to any skeletal part, the most marked over the ribs and skull.
3. Pallor of the skin and mucous membranes.

Laboratory Findings. Roentgenograms showed marked osteoporosis and multiple minute osteolytic lesions involving the skull, ribs, clavicles, scapulae, vertebrae, pelvis, and bones of the extremities. We have had the opportunity to follow this patient for a period of four years. During this time, we have seen her on numerous occasions. She has been maintained on urethane, orally, 2 grams, daily. Table 4 summarizes the laboratory data and bone marrow studies during this period of time.

TABLE 4

MULTIPLE MYELOMA TREATED WITH URETHANE
2 Grams Daily for 4 Years

Tests	7-18-49	9-13-49	11-30-49	3-15-50	9-5-51	1-12-53
Hemoglobin (Gm. per 100 cc.)	11.0	13.5	11.0	11.5	12.0	13.5
RBC (million per cu. mm.)	3.6	4.4	3.8	3.7	4.1	4.5
WBC (per cu. mm.)	6,000	9,800	4,600	4,000	5,200	5,000
Sedimentation Rate (mm. per hr.)	42	7	10	---	---	---
Total Protein (Gm. per 100 cc.)	12.6	8.66	11.88	---	9.9	9.0
Albumin (Gm. per 100 cc.)	.87	.76	.81	—	2.16	2.7
Globulin (Gm. per 100 cc.)	11.73	7.9	11.03	---	7.76	8.3
Phosphorus (mg. per 100 cc.)	3.7	3.8	---	---	---	---
Calcium (mg. per 100 cc.)	11.6	9.0	---	14.1	---	---
Blood Morphology	Rouleau, no myeloma cells					
Bone Marrow (% myeloma cells)	33	3.5	35	3.0	9	5
URETHANE THERAPY	2 Gm. Daily		No therapy 3 weeks		2 Grams Daily	

It is interesting to note that marked hyperglobulinemia, seen initially, has tended to diminish slightly. The total serum proteins have decreased. The marrow myeloma cell population has shown a remarkable change. Another important fact to observe was the increase in the marrow myeloma cells during a three weeks' period when urethane was omitted.

The bone marrow of this patient, who had generalized skeletal involvement by the tumor, contained 33 per cent myeloma cells in the initial aspiration on July 20, 1949. After two months of treatment with urethane, the marrow was found to contain 3.5 per cent myeloma cells with definite evidence of cytologic alteration in the tumor cells present. The chromatin pattern was coarser and the cytoplasm showed a mottled, vacuolated appearance with the cytoplasmic margins in many cells irregular and frayed. Rouleau formation of the erythrocytes was less marked than in the previous examination. Normal marrow cells were abundant throughout the smears. On July 17, 1952, aspirated marrow contained 15 per cent of myeloma cells, some very large in size. The chromatin pattern was less coarse than in the previous examination. Normal marrow cells were present in abundance and in normal proportions. It seems evident from the bone marrow picture in this case that urethane produced a very definite cytologic alteration in the

myeloma cells, with possibly a significant diminution in their number, although this latter point must be accepted with caution.

The patient noted a subsidence of the exquisite bone pain approximately five to six weeks after urethane therapy was instituted and pain has remained absent since. She has assumed some of her previous usual extra-curricular activities as attending bridge games and church. During this four year period, there has been no change in roentgenograms of her skeleton; however, she has regained considerable strength and use of her neck muscles. We consider her improvement very good.

TABLE 5

MULTIPLE MYELOMA TREATED WITH URETHANE
2 1/2 Grams Daily for 18 Months

Tests	5-18-51	7-11-51	9-24-51	4-24-52	1-19-53
Hemoglobin (Gm. per 100 cc.)	14.5	12.0	15.5	13.5	15.0
RBC (million per cu. mm.)	4.8	4.05	5.5	5.01	5.7
WBC (per cu. mm.)	10,300	18,300	9,600	6,200	6,800
Sedimentation Rate (mm. per hr.)	100	88	61	---	49
Total Protein (Gm. per 100 cc.)	7.8	7.6	7.84	---	7.65
Albumin (Gm. per 100 cc.)	3.1	3.02	3.63	---	3.48
Globulin (Gm. per 100 cc.)	4.7	4.58	4.21	---	4.17
Axillary Lymph Node	Inflammatory				
Blood Morphology	Rouleau, no myeloma cells				
Bone Marrow	Not diag.	Myeloma cells present			
Skeletal Roentgenograms	Spine, Skull, Ribs Negative				

Case No. 3. The patient, a 44 year old farmer, consulted us on May 17, 1951, because of periodic episodes of fever for one year. He was also aware of a nondescript dull aching lumbar pain. Original examination revealed minimal bilateral lymphadenopathy. Admitting temperature was 100.4° F. His laboratory studies on this and subsequent visits are tabulated in Table 5. Originally, bone marrow studies were not diagnostic, and biopsy of a single axillary node was reported inflammatory. Two months later, on a return visit, a repeat study finally established a diagnosis of multiple myeloma. Urethane therapy was prescribed, and his symptoms gradually subsided. He has gained weight, his fever has disappeared, and the patient has returned to his farm labor.

PROGNOSIS

It is the general consensus that the average life expectancy in multiple myeloma is approximately two years. Attempts have been made to correlate the prognosis with the degree of immaturity of the myeloma cell, the philosophy being that the more immature the myeloma cell the poorer the prognosis; and therefore, the shorter the survival time. We have been able to follow 31 patients from time of onset of symptoms until death—with extremes of two months and fifty-three months, an average of 13.7 months.

Of the 13 patients treated with urethane, 3 have been reported, 1 was lost to follow up, and 1 had therapy instituted recently. The remaining 8 have died. The 3 patients reported have taken urethane for a longer period of time than the average life expectancy for the group as a whole. In no other instance was the patient able to tolerate the drug. Usually, he became discouraged and discontinued medication because of nausea. Leucopenia was never a definite contraindication. The remaining 38 patients from our series of 51 patients were seen and treated prior to the introduction of urethane therapy.

CONCLUSION

We have reviewed the clinical and laboratory findings of 51 cases of proved multiple myeloma. It is obvious that the symptom complex may be very bizarre. No single test, other than bone marrow study, is diagnostic; however, the results of other tests may be suggestive. Anemia is not always present, and roentgenograms will not always establish the diagnosis. One must suspect multiple myeloma and take steps either to prove or to disprove its existence.

Treatment must be individualized. We believe urethane has proved of value in a few patients, and we have observed several interesting results from its use: (1) A return to normal of altered A/G ratio; (2) a diminution of hyperproteinemia; (3) a decrease in sedimentation rate, (4) improvement, roentgenographically, of a pathologic fracture of the cervical spine; (5) a decrease in the marrow myeloma cell population, as well as suggestive cytologic changes. Urethane is a drug that can be administered safely for long periods of time.

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TWELVE YEARS' EXPERIENCE WITH ELECTROSLEEP (SHOCK) THERAPY*

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NEW ORLEANS

An analysis of electrosleep (shock) treatment for psychiatric disturbances, representing the experience of a number of psychiatrists in New Orleans during the past twelve years, has recently been completed, and I shall present to you some observations which I believe will be enlightening.

Most innovations in medicine soar on a wave of popularity and enthusiasm, only to recede in a comparatively short time. This has not been true of electrosleep therapy, and various modifications of shock treatments are used all over the world. Indications for such therapy are becoming better clarified, and new methods of treatment are being constantly advanced. We have followed the orthodox method of Cerletti and Bini.

During the past 12 years, at the DePaul Sanitarium †, 7,147 patients received 56,596 treatments. (Table I). In this same period, at Touro Infirmary,‡ 3,023 patients received 17,679 treatments. (Table 2). Thus, in these two hospitals, 10,170 individual patients received a total of 74,275 treatments.

TABLE 1
ELECTROSHOCK THERAPY—DEPAUL SANITARIUM

Years	Patients	Treatments
1941-1942	375	3,372
1943-1944	622	7,595
1945-1946	1,973	13,726
1947-1948	1,911	13,082
1949-1950	1,039	9,908
1951-1952	1,227	8,913
	7,147	56,596

At Touro Infirmary, during 1951 and 1952, 134 patients were hospitalized, and 183 patients came to the hospital for their treatment and left the hospital in approximately an hour. In 1952, 86 patients were hospitalized, and 216 out-patients received electro-sleep treatments.

Our experience in treating the milder depressed states on an out-patient basis has been most satisfactory; however, if

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† DePaul Sanitarium, located in the city of New Orleans, is a private hospital for patients suffering from psychiatric disorders. Bed capacity: 230.

‡ Touro Infirmary, in the city of New Orleans, is a general hospital with a neuropsychiatric clinic and a small unit for mild emotional disorders.

TABLE 2
ELECTROSHOCK THERAPY—TOURO INFIRMARY

Years	Patients	Treatments
1941-1942	237	936
1943-1944	567	3,271
1945-1946	621	3,165
1947-1948	624	3,512
1949-1950	569	3,988
1951-1952	405	2,807
	3,023	17,679

the patient is not cooperative, or if he is disturbed, hospitalization is essential.

Considerable judgment is at times required to determine whether electrosleep therapy is indicated. Disorders responding best to this type of treatment are undoubtedly those which are functional and have an emotional basis. Best results with this treatment are in the depressions, and here are listed the common types of emotional depression:

1. Reactive depression, or prolonged grief, in which a patient fails after a considerable period to recover from a bereavement, a financial catastrophe, or an emotionally traumatic experience.
2. The depressed phase of the manic depressive syndrome.
3. Involutional menalcholia.
4. Presenile depression.
5. Psychoneurosis with depression.
6. Marked depression with other diseases (such as general paresis, tuberculosis, primary anemia, etc.)

Patients suffering from these conditions respond splendidly to electrosleep treatment. In fact, these emotional disorders are the cardinal indications for such treatment.

We studied 200 depressed patients at the DePaul Sanitarium between 1935 and 1940, who in that period received simple psychotherapy and general hospital care (hydrotherapy, occupational therapy, etc.) but no electrosleep treatments. These 200 patients remained in the hospital 25,328 days, or an average of 126 days per patient. In contrast, 200 depressed patients in the years 1951 and 1952 spent 5,332 days in the hospital, or an average of only 26 days per patient. Thus, we see that before electrosleep treatments were instituted, the average stay of depressed patients in the DePaul Sanitarium was 126 days, whereas, with electrosleep treatment, the average stay of a depressed patient is 26 days. These patients are restored in approximately one fifth of the time that would be required if electrosleep treatments were not employed. One readily sees the tremendous financial saving that results from treating a patient in the hospital less than a month as compared to treating them four or more months. With treatment, the patient is restored to normal rather quickly and does not have to suffer and be hospitalized for a long time.

In 1952, the average number of treatments, for depressed patients, was 7, though some few patients required only 3, 4, or 5 treatments; on the other hand, some patients needed 10 or 12 treatments. We usually expect a depressed patient to recover with 6 to 9 treatments. As a rule 3 treatments are given the first week, and 2 per week thereafter, but this varies considerably according to the indications —an agitated, or depressed patient, with suicidal intent, may be given 2 or even more treatments the first day, then 1 treatment a day for the next several days, depending upon how he responds (unquestionably suicides have been prevented by prompt and adequate electrosleep therapy).

TABLE 3
DEPAUL SANITARIUM

100 Manic Patients	Days in Hospital	Average Days
1935-40	12,696	126
1952	3,609	36
1952—Average number of EST per patient		9
200 Depressed Patients	**Days in Hospital**	**Average Days**
1935-40	25,328	126
1952	5,332	26
1952—Average number of EST per patient		7

It has been stated that patients exhibiting the manic phase of the manic depressive syndrome do not respond so well

as the depressed patients, but an analysis of the statistics in our study does not bear this out except to a very slight degree. One hundred manic patients, in the period 1935-40, when electrosleep treatments were not employed, stayed in the hospital 12,696 days, or an average of 126 days per patient. (See Table 3). In 1952, with electrosleep treatment, 100 manic patients spent 3,609 days in the hospital, or 36 days per patient. These patients had an average of 9 treatments. In the years before electrosleep therapy, the depressed and the manic patients spent approximately the same time in the hospital (126 days); in 1952, the depressed patients, with electrosleep treatment, spent an average of 26 days in the hospital, and the manic patients 36 days. Thus, one readily sees the tremendous advantage of electrosleep treatments in manic as well as in depressed patients. From a nursing point of view, patients receiving modern treatment are much more readily cared for. A patient may come to the hospital in a very excited or hypermanic state, and after a few treatments calm down and become better adjusted to the hospital routine.

CONTRAINDICATIONS TO EST

The absolute contraindications are few:

1. Marked osteoporosis is dangerous because of the possibility of fractures, etc.
2. Heart disease with decompensation is usually regarded as a contraindication until decompensation is corrected. Aneurysm would certainly be a great hazard.
3. The treatment is usually not given in acute febrile disease.
4. Malignancy is a grave complication and frequently prohibits the employment of EST.

There are other conditions which are not absolute contraindications but do add risks:

1. Cardiovascular disease, without decompensation, is an added risk but seldom prevents the patient's receiving EST if the emotional disorder is of a serious nature.
2. Coronary thrombosis, unless it is recent, adds some risk, but these patients frequently stand the treatment without any bad effects. In calculating the cardiovascular risk, after the usual tests are made, I determine whether or not a patient can walk up a flight of stairs; if he can do this, he is, in my opinion, able to take EST.
3. High blood pressure is often the result of apprehension and agitation, and EST frequently causes the blood pressure to return to normal or near normal.
4. Advanced age is a problem which must be given careful consideration, but we have treated patients in their 60's and 70's with satisfactory results, and two patients aged 85 and 86 did splendidly.
5. Brain disease is a contraindication; however, in a few instances very disturbed patients have "calmed down" with several treatments.
6. Presenile patients, with but slight pathology, respond well to treatment. The underlying organic deterioration is not affected, but the agitation and depression are usually improved.
7. Pregnancy has not proved a contraindication. We have treated approximately 10 women, in all stages of pregnancy, without complications.

COMPLICATIONS DUE TO ELECTROSLEEP TREATMENT

In this study, based on 10,170 patients who received 74,275 treatments, there has not been a single fatality due directly to EST, and complications produced by treatment have not been of a serious nature.

In 1951, at the DePaul Sanitarium, 534 patients received 4,217 treatments. There were 5 compressed fractures of the spine. These were mild and showed no neurological disturbances though they caused treatment to be postponed for two or three weeks; they did not interfere with completion of the series of treatments or pre-

vent recovery of the patient.

In 1952, at the same hospital, 693 patients received 4,696 treatments. There were 4 compressed fractures of the spine (mild), and 1 fracture of the surgical neck of the left humerus. This latter complication necessitated termination of treatment, but the patient recovered, as several treatments had already been given.

At Touro Infirmary, in 1951, 181 patients received 1,201 treatments; there were 3 proved fractures of the spine (mild), and 1 questionable fracture of the spine.

At Touro Infirmary, in 1952, 244 patients received 1,606 treatments. There was 1 compressed fracture of the spine, and 1 ruptured anterior tibial tendon.

Spinal injuries that occur with this type of treatment must not be confused with fractures of the spine as produced by diving or serious automobile wrecks.

Thus, the most frequent complications from electrosleep therapy are mild compressed fractures without neurological involvement. Pain is a fairly prominent symptom, but even that may not last more than a week or two, and no casts or girdles are necessary. The main disadvantage of such a complication is that treatment is frequently interrupted for a time.

From the above figures, we see that complications are not numerous, and the danger of such complications should not defer treatment.

INDICATIONS FOR ELECTROSLEEP TREATMENT

While best results are obtained in the affective disorders, we do see improvement in other conditions. Individuals receiving electrosleep treatments are listed below with the group percentage of recovery or restoration to what is normal for that individual.

1. Depression, and manic depressive syndrome—80 to 95 per cent are expected to recover promptly.
2. Involutional melancholia, presenile depression—70 to 90 per cent should recover from their depression.
3. Reactive depression, or prolonged grief—95 to 100 per cent recovery can be expected.
4. Psychoneurotic depressions—respond well.
5. Manic phase of the manic depressive syndrome—75 to 90 per cent usually respond satisfactorily.
6. Schizophrenia or dementia precox—60 to 70 per cent of those individuals in the first or second attack are restored. They respond well in the first or second episode if treatment is instituted early; if the condition is well established (of two or three years' duration) very little can be expected, though often treatment brings about an improvement in the behavior of a patient and makes him more amenable to ordinary hospital care.

CONCLUSION

From the study of twelve years' experience with electrosleep treatments at the DePaul Sanitarium and at Touro Infirmary (10,170 patients receiving 74,275 treatments) it becomes apparent that this type of treatment is a tremendous boon in acute emotional and psychotic disorders. It is principally of value in treatment of the emotional disorders, particularly the depressions. Individuals with depression, who received electrosleep therapy, were restored to normal or were well on the road to recovery within 26 days. Similar cases fifteen years ago, who did not receive electrosleep treatments, required 126 days for recovery. Electrosleep therapy greatly shortens the period of hospitalization and prevents suicides. Patients are promptly relieved of their great mental suffering, soon sleep with little or no sedation, and they gain weight. Psychotherapy is often very difficult to carry out in the depressed, agitated, or in the manic patient, but after electrosleep therapy they can be benefitted by psychotherapy.

Complications are comparatively few, and there have been no fatalities caused by electrosleep treatments in this group of 10,170 patients.

In subsequent attacks, the patient often says to the psychiatrist, "I am getting depressed again and I want another series of electrosleep treatments."

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VAGINAL HYSTERECTOMY THE SLING OPERATION

JACK R. JONES, M. D.
BATON ROUGE

Prolapse of the uterus with the usual associated childbirth injuries demands treatment. When the child bearing potentiality is no longer desired the logical treatment of prolapse is vaginal hysterectomy with reconstruction of the bladder supports and of the perineum. It is not my intention here to submit the many varied types of vaginal hysterectomies, but rather to present for your consideration a procedure for a modified vaginal hysterectomy which I have called "The Sling Operation."

PROCEDURE

The cervix is grasped with a tenaculum and circumcised with a scalpel at the reflection of the vaginal mucosa from the pars vaginalis of the cervix. The mucosa is dissected upwards freeing it from the cervix. Next, the anterior vaginal wall is incised to within 1 cm. of the urethral orifice and the vesical and pubocervical fascia are dissected from the mucosa. The bladder is pushed upwards until the vesico-uterine fold of peritoneum is identified. The peritoneum is then carefully incised. In a like manner the cul-de-sac peritoneum is opened.

The corpus uteri is now delivered through the vesico-uterine peritoneal opening into and often outside the vagina. With a tenaculum on the cervix and one on the fundus uteri the entire width of the broad ligaments, the round ligaments, the uteroovarian ligaments, the uterosacral ligaments, and the cardinal ligaments are easily accessible. These ligaments on each side of the uterus are lightly clamped en masse with an intestinal forceps.

By vision and palpation the uterine arteries are easily identified and ligated. This controls the main blood supply.

The uterus is now removed with a scalpel leaving a wedge of myometrium on each side attached to the ligaments. These myometrial wedges are approximated with interrupted sutures and the intestinal forceps on the ligaments removed. It is now evident that a broad ligament sling with a ridge of myometrium in the center has been accomplished. The vesicouterine and the cul-de-sac peritoneal folds are sutured to the superior surface of the sling anteriorly and posteriorly, respectively, accomplishing reperitonealization.

Next, a mattress suture (Kelly stitch) is placed beneath the urethra. The sling is brought forward under the bladder. The anterior edge of the sling is sutured to the ischo-cavernosus muscle on each side. This stitch is placed so as to incorporate the periosteum of the pelvic rami. The sling is now in place and forms a firm support for the urethra and bladder. The excess vaginal mucosa is excised and approximated with interrupted sutures anchoring it to the inferior surface of the myometrial-broad ligament sling, forming an inverted T suture line. Then a modified Hegar perineorrhaphy is performed, completing the operation.

COMMENT

This operation reminds one of the old interposition operation as described by Watkins. Instead of using the corpus uteri to interpose between the bladder and vagina as a bladder support a myometrial-broad ligament sling is used. This eliminates the undesirable features of the former operation such as the development of uterine pathology and pregnancy.

The myometrial portion of the sling immediately postoperatively feels like a ridge beneath the bladder. It gradually becomes smaller in size, and six months after the operation it can hardly be palpated. Yet, the bladder is still firmly supported in its hammock.

The Richardson composite operation utilizes a block of the cervix in a somewhat similar manner to support the va-

* Presented at the Seventy-third Annual Meeting of the Louisiana State Medical Society, May 9, 1953, in New Orleans.

gina. It offers no more than the usual vaginal hysterectomy as far as bladder support is concerned, yet, has the undesirable feature of retaining hidden endocervical tissue.

During the past five years the "Sling Operation" has been employed in numerous cases. The indication for the procedure is usually uterine prolapse with a severe symptomatic incontinent urethrocystocele. There has been no mortality and the end postoperative results have been gratifying. No prolapse of the vagina or recurrent cystocele has developed.

The sling operation is fast and easy to perform. It accomplishes all the desirable results of a vaginal hysterectomy and offers a better bladder repair than any procedure I have employed previously. It affords excellent exposure for enterocele repair. A partial or total colpectomy can be done if necessary following the sling operation. To date, I have had no undesirable results from this procedure.

PLACENTA ACCRETA

A 15 YEAR STUDY AT CHARITY HOSPITAL AND TOURO INFIRMARY IN NEW ORLEANS *

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Placenta accreta, although one of the less common conditions associated with hemorrhage in pregnancy, should be considered a serious complication. The mere fact that there is little forewarning of the presence of this entity, in itself is sufficient to demand respect. Writers on the subject are not in complete agreement as to treatment, hence the management may be confused.

This fifteen year report is designed to present the circumstances surrounding the diagnosis and management of 15 proven and 3 probable instances of placenta accreta.

DEFINITION

Placenta accreta is a condition in which, due to the absence of the decidua basalis and intimate association of chorionic villi with myometrium, no line of cleavage exists between the placenta and uterine wall. Three forms are described:

1. *Placenta accreta vera*—condition in which a very thin layer of decidua or none exists.
2. *Placenta increta*—condition in which not only the decidua is scant or absent, but also the chorionic villi penetrate deeply into the myometrium.
3. *Placenta percreta* — condition in which the chorionic villi have perforated the uterine wall.

These conditions may be focal, partial, or complete, depending upon how much of the placenta is involved in the pathological process.

ETIOLOGY

There is universal agreement that endometrial trauma plays a major role in the subsequent development of placenta accreta. However, many other etiological factors have been considered. [1] These are listed in Table 1. As will be shown in the

TABLE 1
ETIOLOGY OF PLACENTA ACCRETA *

Uterine Factors	
Congenital Anomalies	*Trauma*
A. Absence of Decidua	A. Cesarian Section
B. Diverticula, Uterine	B. Caustic Agents
C. Endocrine: Defective Corpus Luteum	C. Curettage
	D. Hysterotomy
	E. Irradiation, Intrauterine
	F. Manual Removal of Placenta
Infection	
A. Endometritis	
B. Pyometrium	*Tumor*
	Fibromyomata, Submucous

Placenta Factors
Abnormal Location
A. Cornual Implantation
B. Previa
Development Defect
Membranacea

* From McKeogh and D'Errico.

* Presented at the Seventy-third Annual Meeting of the Louisiana State Medical Society, May 9, 1953, in New Orleans.

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present study, an accurate past obstetrical history is the only aid in anticipation of this entity.

PATHOLOGY

There is an intimate fusion of the placenta and uterine wall. These two tissues are so adherent that no line of demarcation can be found. Microscopically, the prominent feature is partial or complete absence of the decidua basalis. It is the absence of the spongy layer of the decidua which gives rise to the clinical phenomena associated with this condition, since the normal separation of placenta takes place by a cleavage through the spongy layer.

In 12 cases reported by Irving and Hertig [2] the decidua vera was also carefully examined and found to be normal in only 2 cases, thus leading these authors to assume that the ovum, at the time of nidation, was planted in a barren soil and forced to attach itself to a particularly denuded surface.

Placenta accreta is often associated with other abnormalities of the placenta, such as placenta praevia.

INCIDENCE

Statistics vary considerably as reported by different authors. Undoubtedly many cases do not appear in the literature, particularly those cases of partial and focal placenta accreta. The incidence reported by five authors is shown in Table 2.

TABLE 2
INCIDENCE OF PLACENTA ACCRETA

Author	Incidence
Nathanson	1 in 20,000 Deliveries
Irving and Hertig (Boston Lying-In)	1 in 1,956 Deliveries
Faulkner	1 in 2,000 Deliveries
Eastman (Johns Hopkins)	0 in 70,000 Deliveries
Kraul (Vienna)	1 in 20,000 Deliveries

DIAGNOSIS

No symptoms have occurred frequently enough to be definitely associated with this condition. Several cases have been reported in which the patient experienced severe lower abdominal pain during gestation and McKeogh and D'Errico [1] believe that any patient with a retained placenta who has had a history of unusual severe labor-like pains during gestation should be treated as a possible candidate for accreta.

The diagnosis is made when there is retention of the placenta after a reasonable length of time with failure to find a line of cleavage between placenta and uterine wall on intra-uterine examination. The differential diagnosis must include consideration of retained, separated (trapped) placenta, or adherent placenta. In these conditions manual removal will be successful.

MANAGEMENT

There are considerable variations in advocated treatment of this condition. Most authors seem to feel that hysterectomy is the treatment of choice with no attempt made at manual removal. However, recent case reports have appeared in the literature where the placenta was allowed to remain in utero and the patient treated expectantly, with excellent results. [1] The problem of management is largely dependent upon the amount of bleeding and upon uterine response to the whole or partial removal of the placenta. It is mandatory that adequate preparations for massive transfusion and/or immediate hysterectomy be made prior to attempted manual removal. In complete placenta accreta there is ordinarily no excessive bleeding unless repeated Crede maneuvers or traumatic manual removal has been attempted. In partial placenta accreta the hemorrhage is usually prompt and profuse. In this instance the bleeding comes not from the area of the accreta, but from adjacent areas where placental separation has taken place. Sinuses remain open because effective uterine contractions are prevented by the retained placenta.

In those cases in which profuse hemorrhage attends attempted manual removal, prompt blood replacement and hysterectomy should be carried out. However, if little bleeding is present, nothing is lost by temporizing if the attendant is ade-

quately prepared for blood replacement and surgical intervention in the event of sudden bleeding.

Greenhill [3] states that, in spite of 14 cases in which the placenta was allowed to remain and all the women survived, he recommends abdominal hysterectomy as the treatment of choice. On the other hand McKeogh and D'Errico [1] make a plea for conservatism. In reporting 13 cases, (6 confirmed by microscopic examination) they treated 9 of these conservatively with no mortality. Irving and Hertig[2] concluded that manual extraction of the adherent placenta is extremely dangerous and that supravaginal hysterectomy with no attempt at manual removal produces excellent results. Muir[4] reports a case in which the placenta was allowed to remain and the patient subsequently had a normal pregnancy and placenta.

MATERIALS

Herewith are presented 18 cases of placenta accreta. Fifteen of these were confirmed by histological examination. These cases were taken from the files of Charity Hospital of Louisiana, and Touro Infirmary, both in New Orleans, from a period of 15 years (1937-1953). The incidence (Table 3) in 117,317 deliveries at Charity Hospital was 1 in 8,379. This combined with the incidence of 1 in 6,818 at Touro (27,273 deliveries) presented a combined incidence of 1 in 8,032 in 144,590 deliveries.

TABLE 3
INCIDENCE

	Total Deliveries	Placenta Accreta	Rate	Per Cent
Charity Hospital	117,317	14	1-8,379	.012
Touro Infirmary	27,273	4	1-6,818	.015
TOTAL	144,590	18	1-8,032	.012

The average age was 30, the youngest 24 and oldest 40 (Table 4). All except 2 were multiparous. Eleven were at term, 3 past the thirty-second week and 4 under thirty-two weeks' gestation. The earliest gestation was ten weeks.

Endometrial trauma was apparent in 10 women, manual removal of the placenta performed in previous pregnancies in 3 and in all but 6, some predisposing cause was present.

TABLE 4
PREDISPOSING CAUSES

Case No.	Age	Parity	Gestation Weeks	Predisposing Causes
1	24	i	32	None found
2	29	i	40	Postpartal hemorrhage and dilatation and curettage last pregnancy.
*3	26	o	40	None found
4	26	ii	40	Uterine fibroids
5	36	ii	42	12 abortions
6	34	o	28	Uterine fibroids
7	25	vii	10	Dilatation and curettage
8	26	i	41	Postpartal morbidity following 1st delivery.
9	27	ii	40	Adherent placenta with morbidity on both previous deliveries.
10	40	viii	38	Uterine fibroids—3 dilatations and curettages.
11	29	iv	41	None found
†12	30	xii	31	Endometritis after 2 previous deliveries, manual removal placenta after last delivery.
†13	24	v	39	None found
*14	30	vi	39	None found
15	32	i	28	Dilatation and curettage
16	35	iii	36	Uterine fibroids — dilatation and curettage.
17	33	iii	40	Manual removal placenta after 2 previous deliveries.
*18	35	viii	40	None found

* Treated conservatively.
† Maternal deaths.

CLINICAL COURSE

There were 11 spontaneous deliveries, 2 forceps deliveries, 2 breech extractions, 2 cesarean sections and 1 abortion (Table 5). Postpartal hemorrhage occurred in 11 of the 18 cases (61 per cent). Attempted manual removal was performed in 13. In 3, partial removal was sufficient and in 10 of these hysterectomy was considered necessary. There were 14 hysterectomies

TABLE 5
CLINICAL COURSE

Case	Delivery type	Postpartum Hemorrhage	Extent of Disease	Microscopic Confirmation	Fetal Results	Associated Placental Abnormalities	Management
1	Forceps	0	Complete	Increta	Live	0	Attempted manual removal-subtotal hysterectomy
2	Spont.	+	Partial	Accreta myometrial endometriosis	Live	0	Uterine packing x 2 D & C—subtotal hysterectomy
* 3	Spont.	0	Partial		Live	0	Partial manual removal
4	Spont.	0	Partial	Accreta	Live	0	Attempted manual removal x 2—subtotal hysterectomy
5	Cesarian s.	0	Complete	Accreta	Live	0	Subtotal hysterectomy
6	Breech	+	Partial	Accreta	Live	0	Partial manual removal—subtotal hysterectomy
7	Spont. Abortion	+	Partial	Accreta	—	0	D & C x 2—subtotal hysterectomy
8	Forceps	+	Complete	Accreta	Live	0	Attempted manual removal—subtotal hysterectomy
.9	Spont.	+	Partial	Accreta	Live	0	Partial manual removal—total hysterectomy
10	Spont.	+	Complete	Accreta	Live	0	Attempted manual removal—subtotal hysterectomy
11	Spont.	+	Partial	Accreta	Live	0	Attempted manual removal—total hysterectomy
†12	Spont.	0	Partial	Accreta	Live	0	Attempted manual removal. Pt. expired under anesthesia
†13	Spont.	+	Partial	Increta	Live	0	Subtotal hysterectomy. Expired. Shock.
*14	Spont.	0	Partial		Live	0	Partial manual removal
15	Spont.	+	Complete	Accreta	S. B. Prem.	0	Attempted manual removal—subtotal hysterectomy
16	Cesarian S.	0	Complete	Accreta	Live	Placenta Praevia	Total hysterectomy
17	Breech	+	Partial	Accreta	Live	0	Attempted manual removal—subtotal hysterectomy
*18	Spont.	+	Partial		Live	0	Partial manual removal

* Treated Conservatively.
† Maternal Deaths.

performed in all, 2 of which were of the total type. In 3 no attempt was made to remove the placenta, in 2 a curettement preceded the hysterectomy.

There was 1 instance of placenta praevia accreta.

There were 16 live births, 1 premature stillborn and one 10 weeks' abortion. The uncorrected morbidity in the mothers was 55 per cent (100.4° twice in twenty-four hours). (Fig. 1).

Two mothers died, a mortality rate of 11.1 per cent. One death, Case No. 12 (Tulane), exemplifies two important considerations; the predisposing causes and the hazard of overzealous attempts at manual removal of the placenta. This 30 year old negress, para xii, gravida xii was admitted with a very significant past obstetrical history. She had developed endometritis after 2 of her previous deliveries and following the birth of her last baby a *retained adherent placenta was removed manually.*

She was delivered spontaneously by one of the internes following which the pla-

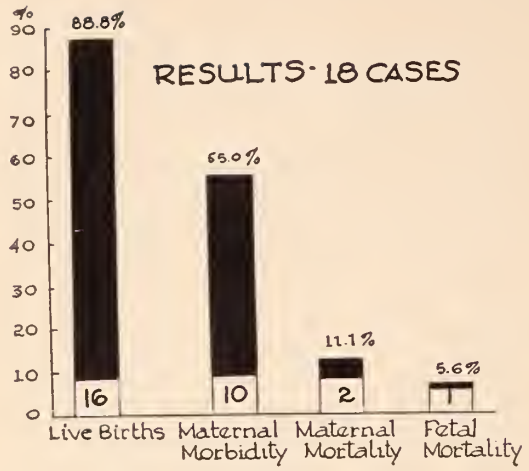


Figure 1

centa failed to separate. After a thirty minute interval she was seen by both the resident and staff at which time it was planned to explore the uterine cavity under deep anesthesia. During this procedure, in which more than average force was employed in an effort to effect a line of cleavage, the patient suddenly expired. Autopsy findings produced microscopic confirmation of placenta accreta and this death was considered caused by an air embolism.

The other death, Case No. 13 (Independent Service) occurred in a 24-year-old negress, para v, gravida vi, who was admitted six hours following a delivery at home. On admission she was in profound shock and bleeding actively from the uterus. Immediate transfusion of 1000 cc. whole blood was given. Due to continued bleeding she was then anesthetized (spinal anesthesia) and examined. On intrauterine exploration a large portion of placental tissue was easily removed. Further exploration revealed "a small piece of adherent placenta which bled rather freely when removal was attempted." Immediate hysterectomy was then performed but the patient remained in shock and died two hours following surgery. The cause of her death was attributed to irreversible shock due to profound hemorrhage, anemia, and spinal anesthesia. The pathological report on the uterus revealed presence of placenta increta.

There was microscopic confirmation in 15 of the 18 cases. In 3, in which the condition was treated conservatively, the clinical impression was all that could be relied on for a diagnosis.

CASE REPORTS

Two typical examples of radical and conservative management are presented:

1. Case No. 6—V. S., No. T-44-147715, age 34 years, primipara, 28 weeks. Had been treated earlier in her pregnancy for threatened abortion and uterine fibroids. Patient was delivered in the hospital on July 27, 1949, (by breech extraction) of a viable premature infant. The placenta failed to separate, and thirty minutes following delivery she began to bleed profusely. The loss was approximated at 1500 to 2000 cc. Her blood pressure began to fall and the pulse rate increased. Transfusion was immediately begun and examination under anesthesia revealed a portion of the placenta to be firmly attached to the lower uterine segment. As much placenta as possible was removed manually. Following this the patient continued to bleed. To conserve blood the uterus was packed tightly and a subtotal hysterectomy done. Total estimated blood loss was 3000 cc. and the patient was given a total of 3000 cc. of citrated blood before and during the procedure. Convalescence was uneventful, except for fever on the second post-operative day, and the mother and baby were discharged on the ninth post-operative day.

The pathological diagnosis was uterine fibroid with degeneration and a placenta accreta.

2. Case No 18, E. H. No. T-53-95394, age 35, para viii, gravida xiv, abortus v. This patient had had five abortions at home. All previous confinements had been normal and at home. She was delivered at home, by a midwife. The patient stated that she bled profusely following delivery, and became very weak. The placenta failed to separate and twenty-four hours after delivery she was sent to the hospital. On admission her pulse rate was 80, blood pressure 110, and hematocrit 22 per cent. There was no free bleeding and the uterus was firm. Shortly after admission she began to bleed freely and the pulse rate increased to 120, at which time her blood pressure dropped to 80 m.m. systolic. Transfusion with citrated blood was immediately started. Following this an examination under anesthesia revealed the placenta to be partially separated and lying free inside the internal os. This was removed without difficulty. About 25 per cent of the placenta however, was firmly attached to the posterior surface of the lower uterine segment. This could not be removed manually. No further attempts at removal were made. The uterus contracted well and bleeding ceased. The patient had an uneventful, afebrile postpartal course, and was discharged on the ninth postpartal day.

DISCUSSION

In the light of our present experiences,

it is difficult to become dogmatic and draw any set rule to govern management of the third stage of labor when placental delivery does not occur or assumes an abnormal pattern. With the present day use of ergonovine or methergine with delivery of the anterior shoulder, placental delivery usually occurs within five minutes of birth of the baby. If this does not happen then a number of very natural causes might be responsible. An oversized placenta, (twins, extra large baby, or in fetal hydrops) may simply be trapped because of its bulk. Again, the lower segment of the uterus, in particular, the physiological contraction ring, might also trap a *normal sized* placenta. In either case, "manual assistance" or "spooning" the placenta from the vagina or from the cervix may be necessary and is usually simple and much less traumatic than a forced Crede maneuver.

If, on the other hand, there is no evidence of the placenta presenting at the cervix, one should immediately be alerted for possible difficulty. The patient should be hospitalized, adequate blood made available and good anesthesia at hand. A surgical facility must be readily accessible before further examination is attempted.

Manual removal of the placenta is then tried. This is facilitated if the top or uppermost margin of the placenta is first surveyed. Perforation of the uterine wall is less hazardous in this approach. If a line of cleavage is found the placenta is removed. If this is not found readily and easily, we believe that hysterectomy is the method of choice. The one example of a maternal death from air emobolus attests to the danger of traumatic removal.

The past performance of the patient in previous pregnancies, especially where previous removal of the placenta was necessary, is one of the most prominent predisposing etiological factors. This, plus any type of previous endometrial trauma, should suggest placenta accreta whenever the history and the third stage of labor are abnormal.

SUMMARY

1. Eighteen cases of placenta accreta are presented. These were collected from 144,590 deliveries in 15 years, an occurrence of 1 in 8,032 or .012 per cent.
2. Histological proof was available in 15 patients. In 3 partial manual removal of the firmly adhered placenta was possible. Clinical impression was that these were partial placenta accretae.
3. There were 12 placenta accretae, 2 placenta increatae and 1 placenta praevia accreta.
4. The average age was 30 years. Sixteen were multiparas, 11 at term, and one 10 weeks' abortion.
5. The predisposing cause was endometrial trauma in 10, previous manual removal of placenta in 3, and in 6 no etiological cause was found.
6. Three women were treated conservatively with success. Attempted manual removal of placenta was unsuccessful in 10. There were 14 hysterectomies performed.
7. Two mothers died. One during conservative attempts at placental removal (air embolus), the other of prolonged shock present on admission, following hysterectomy, a rate of 11.1 per cent. Both of these maternal deaths are considered preventable.

CONCLUSIONS

Placenta accreta is a serious obstetric complication. Its presence may be anticipated by past obstetric history, particularly that of endometrial trauma and previous adherent placenta. If recognized by careful, unsuccessful, atraumatic attempt at manual removal under ideal conditions, (anesthesia, blood and operating room immediately available), total hysterectomy is the method of choice to insure the best interest of the mother.

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COMMON COMPLAINTS OF PREGNANCY AND METHODS OF TREATMENT

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It is felt that this subject is of importance to those who practice obstetrics. It has usually been segregated to a minority role as far as the patient is concerned. The busy practicing obstetrician or general practitioner is apt to think only of the objective signs occuring in his patient, which are important as far as the management of the mother and the fetus are concerned, and which have a bearing on the successful termination of a pregnancy. However, the mother often has numerous complaints, many of which are subjective. These may have no bearing whatsoever on the outcome of her pregnancy, but cause the patient discomfort and symptoms during her pregnancy. These symptoms may be looked upon by the patient as being very important, and it is important that the practitioner also treat these symptoms with a relative degree of concern. If these are minimized, the patient feels that her physician is not interested in her case and loses confidence in her physician. Although we do not agree wholeheartedly with the concept of Grantly Dick Read, it is well known that fear and apprehension play an important part in the outcome of a normal uterine pregnancy.

NAUSEA AND VOMITING

Perhaps the most common complaint of pregnancy which is found in the largest number of women is that of nausea and vomiting of pregnancy. This is thought to occur to some degree in at least 50 per cent of all women who are pregnant. These patients have either some nausea or some vomiting or both. Our method of treatment for this disorder, which we find highly successful, is the use of a high carbohydrate diet in which the patient omits the three meals a day and eats small frequent feedings usually every hour or two and oftentimes eats before arising in the morning. If the patient vomits after eating, she should eat again. This routine should be accompanied by a maximum amount of rest and quiet. These patients are also often put on barbiturates and bromides as a mild sedative. If no results are obtained from this routine, the next step is to try the amphetamine sulfate derivatives. We have had relatively good results from these drugs. If there is still no improvement in the patient, she is then given 100 mgs. of vitamin B_1, intramuscularly, and 100 mgs. of vitamin B_6, intravenously. These injections should be given as often as the patient finds it necessary. Very few patients require further treatment. Occasionally, but very seldom, is it necessary to hospitalize a patient and treat them with infusions of glucose, saline, and other intravenous medications.

PICA

Pica or a perverted appetite, a desire for one specific peculiar food, is rather rare. There is no specific treatment for this and the patients are allowed to fulfill their abnormal dietary desires and usually recover from the condition within the first trimester.

HEARTBURN AND BELCHING

Heartburns and belching are often common symptoms of pregnancy, also associated with mild nausea and vomiting. During early pregnancy, this may be controlled by small doses of sodium bicarbonate, milk of magnesia, soda mints, or the usual anti-acid medication. Small quantities of milk and cream are also of value except in cases in which the heartburn is due to biliary disturbances. During late pregnancy, the anti-acid medications are of value, but care should be taken to see that no drug containing sodium should be administered in large

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quantities. We have had excellent results from using progstimine bromide tablets, 15 mgms., 1 tablet 3 times a day, particularly in the latter part of pregnancy at which time the heartburn seems to be due to distention and lack of motility of the gastrointestinal tract.

PTYALISM

Ptyalism or excess salivation is not seen very often, fortunately. We have not found any medication which relieves this to any extent. Atropine has been advocated, but we have had very poor results with this drug. Most of these patients continue to expectorate until the condition clears spontaneously. This can be a most disturbing symptom as far as the patient is concerned and no satisfactory treatment has been found at this time.

CONSTIPATION

Constipation is a very common bowel symptom throughout a normal pregnancy. Diarrhea is mentioned occasionally, but is seldom seen in obstetrical patients. In the treatment of constipation, it is felt that the following routine is of value. First, the patient should have a large or excessive fluid intake. Secondly, attempts should be made to control the constipation by dietary measures such as large quantities of bulky foods, fruits, and vegetables, and particularly, figs, prunes, prune juice, and dates. If no results are obtained from this attempt to regulate the bowel normally, medications such as mineral oil, milk of magnesia, and cascara sagrada can be used. The use of enemas should be mentioned only in passing and should be used as a last resort. Bowel habits, of course, play an important part in the treatment of this condition. Exercise is found to be of value. In cases in which the chief complaint is diarrhea, a stool specimen should be checked for the presence of ameba and other intestinal parasites. Diarrhea usually responds to diets which are high in apple, banana, and tea. Kaopectate may be used for cases which diet will not control. Milk of bismuth and paregoric can be used in the more severe cases.

HEMORRHOIDS

Hemorrhoids are found to be more common in the multipara and usually in women who have constipation. The two primary symptoms of the hemorrhoids may be bleeding and/or pain. These are best treated by keeping the stool soft, by means of the proper diet, or if this is difficult, the use of small daily doses of mineral oil is of value. Painful or edematous hemorrhoids may be replaced in the rectum by digital examination. Thrombosed hemorrhoids oftentimes may be so painful that the clot must be removed. This can usually be done in the office. The pain can very often be relieved by using one of the many proprietary anesthetic rectal suppositories.

URINARY SYMPTOMS

Urinary symptoms, which usually consist primarily of frequency of urination, are not uncommon. A urine specimen should be checked to rule out the presence of any urinary infection. If any infection is found, it should be treated with the appropriate medication. However, if the urine is found to be negative, this frequency which is usually due to bladder pressure from the uterus may be relieved by small doses of sedatives such as bromides or barbiturates and/or small doses of tincture of hyoscyamus. We have had good results with this procedure.

BACKACHE

Backache is another one of the common complaints found during pregnancy. This may be relieved in many ways. It is often due to pressure of the uterus upon the pelvic floor and from the changes in posture. In severe cases we have found that a maternity corset is often of great value. The wearing of low heeled shoes, which improves the posture, and rubber heels, which minimize the jarring when walking, are also very helpful. Adhesive strapping to the back may help some patients temporarily. The use of heating pads and salicylates is also of value. In the recent years we have found that the exercises as prescribed by the so-called natural child birth advocates have been of a great deal of value in the relieving of the backache

in many prenatal patients. In early pregnancy and before the uterus has risen above the brim of the pelvis, the use of a pessary particularly in cases of retroversion will be of a great deal of value.

PELVIC PRESSURE

Pelvic pressure, which in contrast to backache, is a feeling of heaviness low in the pelvis and not in the specific area, is often relieved in early pregnancy by the use of a Smith-Hodge pessary, particularly when the uterus is retroverted. Later in pregnancy the knee chest exercise, elevation of the feet above the head, and a minimum amount of upright position are found to be of value. The use of restricting clothing, particularly around the legs and waist, should be condemned if the patient has these signs of pelvic pressure. After about the fourth or fifth month, the use of a maternity corset will alleviate a great many of these symptoms.

LEG CRAMPS

Leg cramps are a common complaint in pregnancy, but occur mostly in the last trimester. It has been found that thiamine hydrochloride has been of some value as well as massage and heat. However, in our experience we have had excellent results in the use of quinidine tablets, 1 tablet, three times a day. This has been one of the drugs that we have been using during the past two years that we have had almost 100 per cent good results. These patients are usually very grateful for this medication. Many times when the cramps occur only at night, 1 tablet before bedtime will suffice, and no other medication need be taken during the day.

VARICOSE VEINS

Varicose veins are common findings during pregnancy, and are found much more often in multipara. They occur generally in the legs, thighs, and often around the vulva. For the prevention and the relief of these varicosities the patient should be advised that whenever it is possible to sit down instead of standing that should be done. If they can lie down instead of sitting that is preferable, and if they can lie down horizontally and elevate the feet above the head that is much better yet. The use of Ace bandages and elastic stockings definitely give a great deal of relief to many patients. The patient should also be instructed not to wear any restricting clothing such as garters, tight belts, etc. This restricting clothing will increase the venous constricting pressure and accentuate the varicosities. Most varicosities improve after pregnancy when the pelvic pressure of the uterus is relieved, but seldom return to their normal condition.

EDEMA

Edema or swelling of the feet, legs, hands, or face are seen in a great many patients. When this symptom presents itself, one should suspect toxemia but if no other signs or symptoms of toxemia are found it may be treated symptomatically. It is usually found to be worse during hot weather. We have had good results in treating these patients with low salt diet, limitation of fluids, and ammonium chloride, doses of 1 gram, four times a day. This will often return the water balance to a more normal state and the patient will improve rapidly.

PIGMENTATION OF SKIN

Excessive pigmentation of the skin or the so-called mask of pregnancy is also another complaint which is often voiced by the prenatal patient. Here again there is nothing of therapeutic value but reassurance to the patient that it usually will improve in most patients after delivery although in some few cases may remain the same. This will usually satisfy the patient's curiosity and they will go away feeling much better.

LEUCORRHEA

Leucorrhea is another common complaint that usually occurs more in the middle and third trimester. An increased amount of vaginal discharge is normal throughout pregnancy. However, one must rule out the possibility of trichomonas or moniliasis infection. There is little need to treat the leucorrhea or the vaginal discharge unless it is causing symptoms which make the patient uncomfortable. Routine douches are not advocated. When trichomonas infections are found they are treated with floraquin suppositories, and

proprion jel is found to be very effective in the treatment of moniliasis.

BREAST SYMPTOMS

Breast symptoms such as pain, fullness, and tenderness, are also often found. These usually occur in the first trimester. They may be relieved by wearing a satisfactory and well fitted brassiere. Massage using either olive oil, cocoa butter, or baby oil is found to relieve some of the pain and tenderness. Inverted nipples in the patient who wishes to breast feed her baby should be treated by drawing them out manually, by the use of a breast pump, or by suction cups during the prenatal period.

STRIA GRAVIDARUM

Complaints related to the abdomen such as the formation of stria gravidarum are also common. Very little is known to be done about this condition. However, the wearing of a well fitted maternity corset may be of value. Massage of the abdomen with olive oil, cocoa butter, or even baby oil, has been advocated, but it is our opinion that this does very little good in the prevention of stria.

FAINTING AND DIZZINESS

Fainting and dizzy spells are common throughout all three trimesters. The patient should be checked to be sure that this is not due to anemia, and if so, a hematinic should be given. Hypotension is also a common cause. These symptoms are often relieved by an increase in the amount of rest particularly during the daytime hours and the use of some mild stimulant such as small doses of ephedrine or amphetamine derivatives.

NOSE BLEED

Nose bleed during pregnancy is usually of little importance although it seems to occur more often than normal. It is best treated by reassuring the patient, and in order to stop the bleeding, pressure to the nose along with cold compresses is found to be of value.

HEADACHE

Headache is a very common complaint throughout pregnancy particularly in the last trimester. This should be accepted as a sign or symptom of toxemia of pregnancy and other signs of this condition should be looked for and toxemia ruled out if at all possible. However, most of the headaches that occur during pregnancy are due to tension and are treated best with salicylates, limiting fluids, a low salt diet, and ammonium chloride. Bed rest and sedation have also been found to be of value. The use of ergot derivatives in the treatment of these headaches is to be condemned during pregnancy.

INSOMNIA

Insomnia is not at all uncommon during pregnancy and is usually more severe during the last trimester at which time fetal movements are marked and the uterus is irritable. This may be relieved by a hot bath before bedtime and possibly a bedtime snack of food. Alcoholic beverages sometimes act as sedatives and help the patient to sleep more easily. This complaint is readily relieved by the use of moderate sedation such as bromides and small doses of barbiturates. This is one of the more easily satisfactorily treated common complaints.

Palpitation of the heart is seldom of any marked importance and is treated by reassurance of the patient and belittling the importance of symptoms. Sedation is also of value. In a few cases if a basal metabolic rate is exceptionally high, and it is usually above normal during pregnancy, Lugol's solution may be of value in controlling this symptom.

FEAR

Last and probably most important among the common complaints of pregnancy is apprehension, or fear. Most of the above mentioned symptoms occur in many people who are not pregnant and seldom cause them any worry or discomfort. However, in the pregnant woman these symptoms are exaggerated and it is felt that apprehension or fear is the underlying cause for the magnification of these symptoms. This has even been carried to the extreme where patients come into the office and when asked if they had any complaints would answer "I have no complaints. I feel fine. Therefore, some-

thing must be wrong." This is usually a direct result of the so-called bridge table obstetrics in which the young primipara is scared to death listening to the terrifying experiences that have been related by her well meaning friends at the table. Allaying this fear and apprehension by reassurance and confidence is our greatest aid in minimizing the common complaints of pregnancy. The patient who approaches her future delivery without fear and with confidence in her physician seldom has many of these troublesome, bothersome complaints which have been discussed above.

CONCLUSION

In conclusion, I would like to remind all of you to please be cognizant of the fact that these symptoms which have been discussed, although they may be trivial to us, are of importance to the patient, and a great deal of good can be done by spending a little time reassuring the patient, allaying the apprehension, and treating these minor complaints even though it may be symptomatic in manner.

CARCINOMA IN SITU; 100 CONSECUTIVE CASES OBSERVED OVER A THIRTEEN YEAR PERIOD*

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LLOYD A. HORNBUCKLE, M. D.
SHREVEPORT

So called preinvasive, intraepithelial, or in situ carcinoma is a subject which has produced considerable controversy as to diagnosis and treatment. We wish to present 100 consecutive cases of carcinoma in situ encountered at Confederate Memorial Hospital over a period of thirteen years and some of the associated problems in diagnosis and treatment of this disease. The diagnosis was made on a single biopsy or surgical specimen in each case. Hence, the pitfalls of a single biopsy diagnosis will become evident.

Carcinoma in situ of the cervix may be defined as a lesion of the cervix showing all the characteristics of carcinoma but which has not yet penetrated the basalar membrane. (Figure 1) In this institution



Figure 1

glandular extension is included under the diagnosis of carcinoma in situ and is not regarded as invasion. This is the most common consensus of opinion over the country but not universally accepted. (Figure 2)



Figure 2

Carcinoma in situ is thought to be the precursor of invasive carcinoma but for some reason it has not yet developed the ability to penetrate the basement membrane. According to Hertig and Young evidence favoring this concept is that it occurs with about the same frequency as carcinoma of the cervix; it usually occurs in younger women and, like carcinoma of the cervix, is less frequent in Jewish women; vaginal smears show malignant cells, and carcinoma in situ stains like carcinoma of the cervix, histologically looks like carcinoma of the cervix, and has a similar light spectrum. Too, they cite 40 cases of carcinoma in situ which have been followed from eleven months to thir-

* Presented at the Seventy-third Annual Meeting of the Louisiana State Medical Society, May 9, 1953, in New Orleans.

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teen years and have developed carcinoma of the cervix.

This has occurred three times in this hospital. The slides on one case showed the initial lesion in 1942, and the final lesion in 1949. (Figures 3 and 4) This patient was treated in 1942 by electroconization of the cervix and bilateral salpingo-oophorectomy and subtotal hysterectomy. After recurrence in 1949, she was treated with x-ray and radium and was still free of disease two years later.



Figure 3

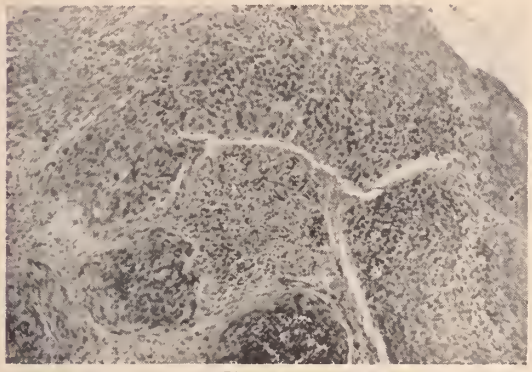


Figure 4

In this series there were 33 white patients and 67 Negro patients. The average age was 41.2 years; the youngest 20 years of age and the oldest 88 years of age. Parity and infection have been linked with carcinoma of the cervix. In this series 97 per cent have had one or more pregnancies or evidence of salpingitis.

Carcinoma in situ is now being diagnosed more frequently due to the integrated residency program, organized gynecologic and tumor clinics, and more frequent routine pelvic examinations on other services. The lesion was diagnosed in this institution only 20 times in the nine year period from 1939 to 1948, and 80 times in the four and one-half year period from 1948 to the present.

DIAGNOSIS

Carcinoma in situ produces a minimum of symptoms and cannot be detected grossly as it is a histological diagnosis. Therefore, it is important that lesions of the cervix be biopsied to determine the diagnosis prior to treatment. The presence of carcinoma in situ in a biopsy indicates that the lesion is either noninvasive or that it has been removed from the periphery of an invasive carcinoma. Therefore, the full extent of the disease must be determined in patients having a biopsy diagnosis of carcinoma in situ of the cervix. We subject the patients, if not pregnant, to an examination under anesthesia, knife conization of the cervix, endocervical curettage, and diagnostic D & C. If pregnant, repeat biopsies are made or a superficial knife conization of the cervix is done. This type of study will usually reveal whether the lesion is confined to the surface epithelium, has glandular extension, superficial invasion, or is frank carcinoma of the cervix. In these cases 1 had frank invasive carcinoma and 3 had superficial invasion.

Forty three cases after biopsy were subjected to knife conization and then hysterectomy. In 11 cases the cone was negative for carcinoma in situ and the cervix as well. In 2 cases the cone was negative and the surgical specimen was positive for carcinoma in situ. In 22 cases the cone was positive for carcinoma in situ and the cervix was negative. In 8 cases the cone and cervix were both positive for carcinoma in situ. From these nontherapeutic knife cones one sees that biopsy or conization removed the entire lesion in 33 cases and failed to do so in 10 patients.

TREATMENT

Treatment has varied through the years. The earlier cases were treated by conization. From 1942 to 1948, all cases were treated with x-ray and radium. From 1948 to 1951, most of the cases were treat-

ed by hysterectomy, or cervicectomy in patients having had previous subtotal hysterectomy, but a few still received x-ray and radium. Since 1950, nearly all have been treated by simple total hysterectomy with excision of about a centimeter cuff of vagina and preservation or removal of one or both adnexae based on the patients' age and condition of the adnexae. We believe that the same standards in preserving ovarian function in carcinoma in situ of the cervix should be observed as would be used in treating benign lesions of the uterus.

Of two cases treated only by conization, one later developed invasive carcinoma and the other was not followed. In the x-ray—radium series of 18 cases, 1 developed invasive carcinoma and died; 1 expired of lymphoma; 9 cases are free of disease; and the rest cannot be followed. In a group of 63 cases treated by surgery there have been no recurrences, but 2 did die of unassociated malignancies. Fourteen cases either refused all treatment or started treatment and then deserted the hospital. Five received incomplete x-ray treatment and 9 refused any therapy, but 3 of these 14 had been subjected to knife conization prior to refusing hysterectomy. In these 3 cases there were 2 negative cones and 1 cone was positive for carcinoma in situ. Of the 9 who refused therapy, 1 has subsequently returned and died of carcinoma of the cervix. One case being followed at present has been treated conservatively as she is 89 years of age and a poor operative risk.

Treatment of carcinoma in situ varies from sharp conization or cauterization, in cases involving only the surface epithelium and not the cervical glands, to radical hysterectomy with or without pelvic lymphadenectomy. At present, the most common practice is to cauterize or cone the cervix if the lesion involves only the surface epithelium and the patient is young and desires children, and to do a total hysterectomy with removal of 1 centimeter of vagina in other cases after invasive carcinoma has been ruled out. Where cases are treated conservatively to preserve childbearing function careful follow-up is essential, and surgery is indicated if there is evidence of recurrence or lack of regression of the lesion.

ASSOCIATED PATHOLOGY

Neoplastic and hyperplastic lesions found in addition to carcinoma in situ of the cervix were 3 cases of superficial invasive carcinoma of the cervix; 1 of frank carcinoma of the cervix; 1 leukoplakia of the cervix; 1 sarcoma of the uterus; 1 adenoacanthoma of the uterus; 1 adenomyosis; 14 cases of myomata; 1 leiomyolipoma; 5 cases of cystic hyperplasia of the endometrium; 1 placental polyp; 2 malignant ovarian tumors; 2 benign ovarian tumors; 2 cases of endometriosis; 1 lymphoma; and 8 cases of pregnancy. It is noted that if a definite diagnosis had not been established, 1 frank carcinoma of the cervix and 3 superficially invasive carcinomas would have been missed. If a D & C had not been done, 2 cases of corporeal malignancies would have been missed before hysterectomy, and if hysterectomy had not been performed, 2 adnexal malignancies would have been missed.

Ten of our patients were pregnant or had recently been pregnant. This group must be considered separately because in pregnancy the cervix will not infrequently show anaplastic changes indistinguishable from carcinoma in situ that usually regress after pregnancy. Two of these patients were two and five months postpartum and both were treated by hysterectomy; the patient five months postpartum had a placental polyp in her uterus. Two patients were aborting on admission; one was treated by incomplete x-ray therapy and the other by hysterectomy. One patient had a diagnosis of carcinoma in situ before pregnancy and superimposed a pregnancy; then aborted. She is being followed and a cone specimen is negative for carcinoma. Five patients had intact uterine pregnancies; 2 were treated by hysterectomy. The other 3 were carried

through their pregnancy and all had negative biopsies during the postpartum period. One of these patients has subsequently become pregnant, redeveloped the picture of carcinoma in situ, delivered at term and has again had negative biopsies in the postpartum period. Figures 5 and 6

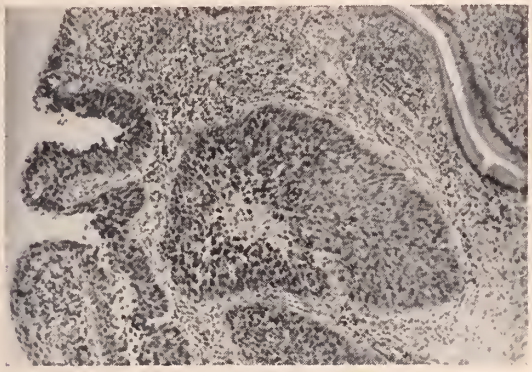


Figure 5

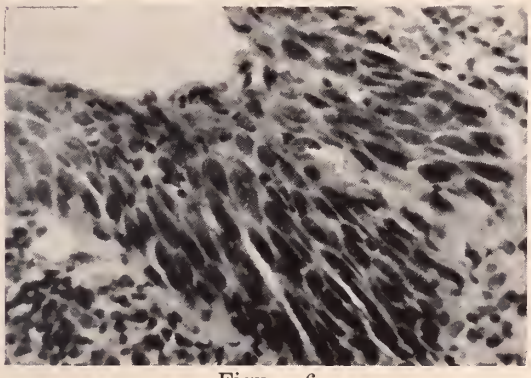


Figure 6

show sections from her cervix during the first and second pregnancies.

Any intelligent cooperative patient without cancerphobia in the childbearing age whose lesion is confined to the surface epithelium, and who desires more children can be treated by knife conization and followed at regular intervals of two to three months with examination of the cervix, Papanicolaou stains, or biopsy, as indicated, until her family is complete or the lesion recurs and proves to be nonregressive. Carcinoma in situ during pregnancy should be regarded as benign after repeat biopsies or superficial conization confirms the biopsy diagnosis. If the lesion persists into the postpartum period one should be safe in observing the lesion at least six months before resorting to radical therapy, unless the lesion appears to be progressing.

SUMMARY

One hundred consecutive cases of carcinoma in situ are presented. A simple method for determining the extent of a given lesion is presented and recommended before resorting to therapy. Indications for conservative and radical management of carcinoma in situ in gravid and nongravid patients are discussed. The results of treatment of carcinoma in situ and the pathology that has been found associated with this lesion are presented.

DISCUSSION

Dr. Cary M. Dougherty (Baton Rouge): I enjoyed listening to Drs. Robinson and Hornbuckle's presentation of the interesting subject, probably the reason being that their ideas on diagnosis and treatment are the same as ours. There are, in fact, no arguments worth the name which I might raise against any of the points set out in their report. But there are a few features requiring emphasis.

A heartening feature of being the discusser instead of the orator is that while the latter must be as objective as possible and weigh facts observed, the former is not necessarily bound by any such restriction. The following comments are purely subjective and at times speculative. Indeed, there is much circumstantial evidence about and speculation upon the subject under discussion from all quarters. Consider carcinoma in situ from these angles:

1. *Concept of the disease.* The majority opinion, along with which Drs. Robinson and Hornbuckle stand, holds that this lesion is the earliest identifiable, irreversible stage of cancer. Items of circumstantial evidence supporting this concept are that carcinoma in situ looks like cancer, grows like cancer and has been observed, as in one of Dr. Robinson's cases, to persist in a cervix for a long period of time directly preceding the advent of invasive cancer. This last piece of evidence, circumstantial of course, has been observed many times.

The minority opinion scoffs that chronic cervicitis has been observed in practically all cervices antecedent to cancer; that no one has actually observed the transformation process from one lesion to the other; whereas, many individuals have seen microscopic invasive cancers actually smaller in size than some surface growths, indicating that they begin as invasive growths. These authorities believe only what they see, that is, if invasion is present the name cancer is applied; if no invasion then no cancer. A damaging observation on this side of the argu-

ment is that on occasion lesions indistinguishable from carcinoma in situ have been seen to be present in the cervix for a time and then to disappear later, as when they accompany pregnancy.

2. Diagnosis. As Dr. Robinson brings out, the presence of the beast can be suspected from biopsy, but his exact size can be determined only by examining him from all sides—that is, by making many sections of a large piece of tissue. Sharp conization or low amputation of the cervix is indicated for this purpose. Errors in overdiagnosis may occur using this procedure if hysterectomy is done in spite of the finding of negative cervical cone. There may be some doubt about the accuracy of diagnosis in the first 11 of Dr. Robinson's 43 patients who were subjected to biopsy-amputation-hysterectomy treatment; in these 11 patients cervical cone and hysterectomy specimen were found to be free of the disease. Yet there were 2 instances in which the cervical cone was negative while the hysterectomy specimen showed carcinoma in situ. Even so, a slightly more conservative attitude would be to re-evaluate later any patient whose cervical conization specimen showed no lesion. To hang on the label "no disease present" one should have at least 24 cuts from 6 different blocks of the average cervical cone. If for any reason, technical or otherwise, adequate histologic study cannot be completed then the proper procedure is to remove the uterus. It is worthy of note here that the sequence of punch biopsy-hysterectomy *is not good practice.* It does not allow opportunity to exclude the diagnosis of early invasive carcinoma, for which disease *hysterectomy is contraindicated.*

3. Treatment. Since we accept the premise that squamous cell carcinoma arises from a portion of surface epithelial tissue, it cannot be denied that there is an early phase of carcinoma in which the cells are still within the confines of the surface epithelium. Hence, early treatment, as Dr. Robinson proposes, is aimed at eradicating the local disease while preserving unaffected organs and structures. Caution in diagnosis should be followed by caution in treatment. It is entirely unnecessary to give full irradiation treatment to the patient, or to subject her to radical hysterectomy.

If one finds that a patient develops a recurrence of invasive carcinoma following hysterectomy for a lesion thought to be carcinoma in situ, then one can be assured the original diagnosis was not, as we presumably hold our concept to be, carcinoma in situ. The fault lies in misdiagnosing an early invasive growth. If careful scrutiny of adequate samples of tissue shows that a lesion thought to be carcinoma in situ undergoes spontaneous regression with passage of time, again we believe the original diagnosis was almost surely in error.

I want to thank Dr. Robinson for allowing me to discuss his excellent paper and at the same time to air my own views on his subject. I think Dr. Robinson's ideas are based on sound observations and good reasoning.

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RUPTURED TUBO-OVARIAN ABSCESSES *

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The purpose of this paper is to call attention to the catastrophic significance of acute intra-abdominal rupture of tubo-ovarian abscesses. Since the advent of chemotherapeutic and antibiotic agents the treatment of pelvic inflammatory disease of specific and nonspecific origin has been greatly augmented, especially in the acute cases. These agents have also been valuable adjuncts in the treatment of the chronic and complicated cases, such as the sudden acute abdominal emergencies that occur with rupture of a tubo-ovarian abscess, but they have not replaced surgery as the main attack against this form of the disease. Needless to say, they have made the surgical approach a much safer one. We do not mean to imply that antibiotics or chemotherapy, or a combination of the two, have replaced the still important features of treatment, namely, the correction of anemia by free use of blood transfusions, the correction and maintenance of fluid and electrolyte balance by use of parenteral fluids, adequate nutrition with vitamin and mineral supplement, bed rest, the use of nasogastric suction if indicated, and the surgical drainage of abscesses when and if they occur by means

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of abdominal extraperitoneal drainage or by colpotomy.

In this paper we will confine ourselves to the, not too uncommon and often fatal complication of pelvic inflammatory disease, namely, rupture of a tubo-ovarian abscess. In 1944, H. E. Miller[1] reported and analyzed the cause of death in 401 consecutive cases occurring at the Charity Hospital in New Orleans for the period 1937-1942. In his series, death occurred in 55 cases of pelvic inflammatory disease. Of these, there were 38 cases associated with tubo-ovarian abscesses. Rupture of the abscess occurred in 14 cases proven at autopsy and there was sufficient clinical evidence to warrant the diagnosis in 7 other cases. Therefore, in 38 deaths due to pelvic inflammatory disease associated with tubo-ovarian abscesses there were 21 deaths due to rupture of the abscesses or 55 per cent. In the entire series of 401 cases, death from ruptured tubo-ovarian abscesses accounted for 5 per cent of the total mortality.

The great majority of the deaths occurred in negro patients for several reasons. There were many more negro admissions as compared to white and also the negro patient as a rule sought medical attention much later in the disease. In another paper by Miller[2] in which he reviewed 3072 cases of pelvic-inflammatory disease, there were 8 cases in which rupture of tubo-ovarian abscess occurred, 6 of which were fatal. The incidence of the complication was approximately .3 per cent and the mortality in these cases was 75 per cent.

MATERIAL

Since January 1, 1952, until April 15, 1953, there have been 6 cases of ruptured tubo-ovarian abscesses observed and treated on the Tulane Gynecologic service of Charity Hospital at New Orleans and 2 cases at the Huey P. Long Charity Hospital, Pineville, Louisiana, in which hospital the gynecologic service is staffed by a senior resident and a fellow from the Obstetrics and Gynecology Department, Tulane University School of Medicine. Of this total of 8 cases, there were 2 deaths.

CASE REPORTS

Case No. 1 (Charity Hospital, New Orleans) E. M., 40 year old colored female, gravida 2 para 2; last pregnancy in 1942; admitted on March 20, 1952, complaining that she had been perfectly well until the day prior to admission when she developed a sudden severe pain across the lower abdomen which radiated into the right leg. Pain was so severe that she fainted. She had no associated nausea, vomiting, chills, or fever. Her menstrual history was normal, her last menstrual period having occurred two weeks prior to admission. No previous history of pelvic inflammatory disease.

At time of admission patient appeared anxious and was perspiring freely. Temperature was 101°, pulse 90, respiration 24, blood pressure 170/110. Physical findings were confined to the abdomen. There was minimal distention with voluntary muscle guarding and tenderness and rebound tenderness over entire lower abdomen. On pelvic examination, the uterus was displaced anteriorly by a soft, cystic, extremely tender mass approximately 8 cms. in diameter.

On culdocentesis approximately 20 cc. turbid yellow fluid was obtained. Impression at this time was twisted ovarian cyst. She was admitted to the ward and infusion and antibiotics (penicillin and streptomycin) started. Initial rush laboratory work revealed white blood count of 11,800. Hematocrit 48. Stain of cul-de-sac fluid revealed gram negative bacilli. Four hours after admission her condition was essentially the same except the pulse rate had increased to 120 and there were no bowel sounds present. She was seen by a senior visiting physician who advised immediate laparotomy.

Under ethylene-ether anesthesia the abdomen was opened and approximately 50 cc. of free yellow pus was found. The uterus was enlarged and nodular containing two fibroids measuring 10 by 10 cm. and 4 by 4 cm. respectively. There were numerous adhesions throughout the pelvis. The right tube measured 6 by 4 cm. and contained clear fluid. The left tube was collapsed and the point of rupture was identified on the posterior surface in its midportion from which some pus was still oozing. The pus was removed from the abdomen with suction, and total abdominal hysterectomy and bilateral salpingo-oophorectomy was then done. Vaginal cuff was closed and the abdomen closed in layers, drains being placed above and below the rectus fascia.

The patient received 1000 cc. whole blood, before, during, and after surgery. Following surgery, antibiotics were continued along with nasogastric suction and parenteral fluids. Levin tube was removed on third day and the patient was ambulated on the fourth day. Antiobiotics were

discontinued on the sixth day. Sutures were removed on the eighth postoperative day with primary wound healing. She was discharged on the ninth postoperative day.

Case No. 2 (Charity Hospital, New Orleans) L. M., 34 year old colored female, gravida 1 para 1, delivered eight months prior to admission. Patient entered the hospital April 10, 1952, complaining of pain and swelling in lower abdomen. Present illness dated back four months, at which time she had complained of lower abdominal pains, associated with profuse vaginal discharge, nausea, vomiting, chills and fever. She was diagnosed as having pus tubes and treated with sulfadiazine and soda. Symptoms were relieved except that swelling in the lower abdomen persisted. At this time her private physician told her she had fibroids. She was seen in the Tulane Gynecology Clinic on April 9, 1952. A cystic mass was palpated in the cul-de-sac from which an unknown quantity of thin yellow pink tinged fluid was obtained. She was admitted the following day.

On admission, temperature was 104°, pulse 108, respiration 20, and blood pressure 130/70. Examination of the abdomen revealed an indistinct mass in the lower abdomen extending to the left of the midline towards the iliac crest. Mass was fluctuant and tender and seemed to involve the abdominal wall.

Pelvic examination revealed a tensely cystic mass filling the pelvis extending towards the left iliac fossa and superiorly to within 4 cm. of the umbilicus. No cul-de-sac fullness at this time. It was felt that she had had retroperitoneal rupture of the abscess which dissected into the subcutaneous tissues of the abdominal wall to the left and anteriorly. An incision and drainage of abdominal wall was done anterior to fascia and paralleling Poupart's ligament and approximately 200 cc. foul smelling pus was obtained. Culture revealed micro-aerophilic alpha hemolytic streptococcus sensitive to penicillin and aureomycin. Full dosage of these drugs together with blood transfusions and other supportive measures was employed.

Patient improved steadily except for daily elevation of temperature to 101°. On April 4, 1952, intravenous pyelograms showed left hydronephrosis; temperature to 102°. On May 5, 1952, patient became nauseated and vomited and complained of epigastric cramping. She developed tenderness and rebound over the entire abdomen which became distended with marked decrease in peristalsis. Nasogastric suction was instituted. Skin became cold and clammy, blood pressure dropped to 50/0 but responded to blood transfusion and nor-epinephrine infusion. X-ray reported pleural effusion. A pelvic mass was palpated. Staff consultation advised colpotomy drainage of abscess which was done and approximately 100 cc. pus was obtained. For next nine days patient improved only slightly. On May 19, 1952, another incision and drainage of abdominal wall and extraperitoneal drainage of the pelvic abscess was done, and 1150 cc. pus was obtained from the right lower quadrant and 100 cc. from the left lower quadrant; 600 cc. pus was obtained by thoracentesis. During the next six days the patient improved slightly and again thoracentesis was done and 65 cc. of clear yellow fluid was obtained. Patient then made slow but steady improvement and was discharged on July 21, 1952.

Case No. 3 (Charity Hospital, New Orleans) M. H. 40 year old colored female, gravida 6 para 1 abortus 5, admitted on June 29, 1952, complaining of vague lower abdominal pain associated with nausea and vomiting, chills and fever of four days' duration. On the day prior to admission she developed sudden severe right lower abdominal pain which grew steadily worse. Referred to Charity Hospital by her private physician.

On admision, temperature was 101°, pulse 100, respiration 25, and blood pressure 128/80. Examination revealed an extremely obese colored female acutely ill. There was generalized tenderness and rebound over the entire abdomen most marked in the right lower quadrant. On pelvic examination, the uterus was palpated anteriorly and enlarged to the size of a ten weeks' gestation and nodular. Patient was diagnosed as acute appendicitis and taken to surgery. At operation, bilateral tubo-ovarian abscesses were found with perforation of the left tubo-ovarian mass and approximately 30 to 50 cc. pus free in abdominal cavity. The gynecology service was then consulted and a total abdominal hysterectomy and bilateral salpingo-oophorectomy was done and all pus suctioned from abdominal cavity. Abdomen was closed in layers with interrupted quilting cotton, drains being placed above and below the rectus fascia. Subcutaneous tissue was packed open with fine mesh gauze. Penicillin and streptomycin in full doses were utilized along with gastric suction and general supportive measures. Secondary closures were done on July 8, 1952, and on July 28, 1952. Patient steadily improved and was discharged on thirty-ninth postoperative day.

Case No. 4 (Charity Hospital, New Orleans) R. M., 50 year old white female, gravida o para o. Admitted on July 6, 1952, to the surgical service complaining of abdominal cramping of two days' duration. Cramping began in lower abdomen and was associated with nausea and vomiting.

On admission, temperature was 99.6, pulse 120, respiration 22, and blood pressure 194/106. An acutely ill white female. Examination revealed diffuse abdominal tenderness and exquisite rebound tenderness more marked in the right up-

per quadrant and left lower quadrant. Urine showed four plus sugar and one plus acetone. Patient was diagnosed as having a ruptured appendix and diabetes.

At the time of surgery, rupture of a left tubo-ovarian abscess was evident, with spillage of 75 to 100 cc. pus into the abdominal cavity. Gynecology service was consulted and a total abdominal hysterectomy and bilateral salpingo-oophorectomy was done. Abdomen closed in layers with quilting cotton with drains above and below the rectus fascia. Postoperatively she was treated with nasogastric suction, penicillin, and streptomycin, sliding scale dosage insulin and other supportive measures.

Patient remained in good chemical balance. On July 10, 1952, coarse rales were heard over the left chest and electrocardiogram was reported definite evidence of myocardial disease. Temperature rose to 103°. On July 11, 1952, temperature was 104°, pulse 103, respiration 46, and patient became irrational. Patient was digitalized and blood pressure dropped to 62/30. Given nor-epinephrine infusion and blood pressure was elevated to 130/66 and remained at that level with the infusion. Electrocardiographic evidence of posterior myocardial infarction. Patient's condition grew steadily worse and she expired on July 13, 1953. Autopsy reported death due to coronary heart disease.

Case No. 5 (Charity Hospital, New Orleans) H. J., 30 year old colored female, gravida o para o. Three months prior to admission patient complained of right sided lower abdominal pain associated with fever, nausea, and vomiting. Admitted to another Gynecology service at Charity Hospital and treated with antibiotics and colpotomy. Discharged afebrile. On November 14, 1952, patient was admitted to Tulane Gynecology service in semistuporous condition. Temperature 102°, pulse 120, respiration 26, blood pressure 108/60. Only history obtainable (from family) was of sudden onset of lower abdominal pain which grew progressively worse occurring shortly before admission. Examination revealed an acutely ill woman in semicomatose condition. Findings limited to abdomen and pelvis. Abdomen was distended with hypoactive peristalsis and generalized tenderness and rebound with muscle guarding. On pelvic examination there was a tense, cystic mass in the right adnexae measuring 4 by 4 cm., woody cellulitis in the left adnexae with extreme tenderness in the entire pelvis. Uterus was anterior, normal size and shape, and slightly fixed.

On arrival in ward blood pressure was checked and found to be 60/0, pulse 104, respiration 32. Blood transfusion was started and patient taken to surgery with the diagnosis of ruptured tubo-ovarian abcess. At operation, bilateral abscesses were found with rupture of the one on the left. Approximately 100 cc. of pus was in the abdominal cavity. Pus was removed and total abdominal hysterectomy and bilateral salpingo-oophorectomy done. Cuff was left open and drains placed above and below fascia of abdomen. At end of procedure blood pressure was 130/80 and pulse was 120.

Patient was treated with nasogastric suction, parenteral terramycin and streptomycin.

On following day, the patient was afebrile with pulse rate of 120, blood pressure 150/90. Transfusion of 500 cc. of blood was given on November 15, and repeated on November 16. For the next four days progress was satisfactory, with reduction in fever and pulse rate and return of intestinal peristalsis.

On November 19, 1952, x-ray chest showed pneumonitis with fluid in right base.

On November 20, 1952, patient had a spike in temperature to 103°, pulse 120. Physical examination was essentially negative except for bilateral calf tenderness with questionable Homan's sign. The following day she passed fecal material per vagina. She continued to run a spiking type of temperature to 103° daily.

On November 24, 1952, patient became disoriented and confused. There was failure of healing of abdominal and cut-down wounds. She was taken to the operating room and secondary closures done on all wounds.

The following day there was active bleeding from the gums and her general condition was poor.

On November 25, 1952, patient went into shock. Blood pressure 90/30 to 68/30. She was treated with blood transfusions and nor-epinephrine infusion with elevation of pressure to 110/30. She then developed Cheyne-Stokes respiration. Course was progressively downhill and she expired the following day.

Autopsy revealed:

1. Multiple abscesses of kidneys
2. Septic spleen
3. Rectovaginal fistula
4. Acute bacterial endocarditis
5. Pulmonary edema

Case No. 6 (Charity Hospital, Pineville) H. L., 44 year old colored female, gravida 3 para 3, last pregnancy ten years prior to admission. She was seen in the emergency room on February 5, 1953, complaining of sudden onset of lower abdominal pain starting the afternoon before. The pain became generalized and steadily increased in severity. For several months prior to admission she had been having menstrual disturbances characterized by excessive flow with severe dysmenorrhea. No previous history of pelvic disease.

Examination revealed an acutely ill, anxious appearing but cooperative colored female obviously in pain. Temperature 103.4, pulse 112,

respiration 20, blood pressure 130/80. Positive findings limited to abdomen and pelvis. Abdomen was acutely tender and rigid with marked rebound tenderness most marked in lower abdomen. Pelvic examination revealed an enlarged, nodular slightly fixed uterus. There was extreme tenderness in both adnexae with fullness but no definite mass palpated in the left. On culdocentesis approximately 10 cc. of sanguinopurulent fluid was obtained. She was admitted to the hospital with a diagnosis of ruptured tubo-ovarian abscess and prepared for surgery.

At laparotomy there was approximately 50 cc. of pus present in the abdominal cavity. The uterus was the size of a three months' gestation with multiple subserous and intramural fibroids. There were many adhesions in both adnexae and a left tubo-ovarian abscess approximately 4 by 8 cm. showing recent rupture. Pus was removed by suction and total abdominal hysterectomy and bilateral salpingo-oophorectomy was done. The vaginal cuff was left open. The abdomen was closed in layers with interrupted quilting cotton with drains placed above and below the fascia. At no time did the patient go into shock. She received 500 cc. of blood during the operation.

Postoperatively she was treated with terramycin and routine supportive measures.

The Levin tube was removed on the second postoperative day. She ran a low grade fever until the sixth postoperative day and remained afebrile thereafter. She was ambulated on the third postoperative day. Drains were advanced daily starting on the fourth postoperative day and were removed completely on the seventh postoperative day. On the eighth postoperative day sutures were removed and there was primary wound healing. She was discharged on the ninth postoperative day.

Case No. 7 (Charity Hospital, Pineville) L. H., 34 year old colored female, gravida 6, para 4, abortus 2; last pregnancy, six years prior to admission. Admitted to hospital on March 12, 1952, complaining of right lower quadrant pain, off and on for two weeks prior to admission. There was no history of previous pelvic disease. On admission, temperature was 102°, pulse 104, respiration 24, blood pressure 120/70. Patient did not appear acutely ill.

Physical findings were confined to the abdomen and pelvis. The abdomen was tender in both lower quadrants with rebound tenderness and reflex rigidity. No palpable masses.

Pelvic examination revealed the uterus to be slightly enlarged and tender. In the left adnexae there was a tender fluctuant mass approximately 5 by 8 cm. A smaller mass equally as tender was present on the right side. Neither mass was pointing in the cul-de-sac. The patient was placed on intravenous fluids, full antibiotic therapy with penicillin and streptomycin and general supportive measures. During the next four days, pain and tenderness subsided and temperature and pulse approached near normal. On the evening of the fifth day she complained of return of abdominal pain and inability to urinate. Temperature rose to 100°, pulse 80. She was catheterized and 100 cc. urine obtained. The following morning she was found to have signs of generalized peritonitis, temperature 101.6°, pulse 120, respiration 28, blood pressure 130/90. It was felt that the abscess had ruptured and she was taken to surgery. At operation a left tubo-ovarian abscess was found which had recently ruptured spilling approximately 700 cc. of purulent material into the abdominal cavity. Pus was removed by suction and total abdominal hysterectomy and bilateral salpingo-oophorectomy was done, the vaginal cuff being left open. Abdomen was closed in layers with quilting cotton with drains above and below fascia.

At the start of the operation when the abdomen was opened, the patient went into shock. In spite of blood transfusion there was no response until nor-epinephrine infusion was started. It was necessary to continue this for twenty hours before the blood pressure was stabilized. The patient was treated with nasogastric suction, parenteral terramycin, blood transfusions and general supportive measures.

Her condition steadily improved with gradual diminution of pulse rate and temperature to near normal levels by the third postoperative day. On the eighth postoperative day the abdomen became distended and temperature rose to 100°. Chest x-ray revealed segmental atelectasis at right lung base. Physical examination revealed a pelvic hematoma which had failed to drain through the vaginal cuff. There was no evidence of subphrenie abscess and x-ray of the abdomen revealed no definite evidence of obstruction.

The hematoma was injected with varidase and the cuff opened wide to facilitate drainage. Patient's condition rapidly improved and comparative x-ray studies of chest three days later showed almost complete disappearance of atelectasis.

Antobiotics were discontinued on seventeenth postoperative day and patient was discharged on twenty-fifth postoperative day.

Case No. 8 (Charity Hospital, New Orleans) L. B., 19 year old colored female, gravida 3 para 3, youngest child 3 years of age. Admitted on April 14, 1953, with history of pain in right side for one month. She had been treated by a private physician for twisted ovarian cyst, pregnancy and pus tubes. Nausea and vomiting for two weeks prior to admission. Sudden onset of more severe pain with vomiting, chills and fe-

ver twenty-four hours before entering hospital. On admission, temperature was 103°, pulse 152, respiration 28, blood pressure 100/78. Abdomen revealed exquisite tenderness and rebound tenderness throughout. Marked voluntary rigidity and absent bowel sounds.

On pelvic examination there was a fluctuant mass filling the cul-de-sac. No pelvic viscera were palpated. She was diagnosed as having ruptured tubo-ovarian abscess and taken to surgery. At operation there was approximately 75 cc. free pus in the abdominal cavity which had leaked from the primary abscess in the pelvis which arose from the left side and involved the sigmoid, small bowel, and omentum. There were pus pockets over the dome of the liver, under the mesentery and in both colic gutters. The appendix was not involved.

The primary abscess cavity was aspirated and 700 cc. pus obtained. All other pus pockets were drained and the abdomen closed in layers with interrupted quilting cotton, drains being placed above and below fascia. Culture of the pus revealed alpha hemolytic streptoccocus sensitive to aureomycin and terramycin. Following surgery full dosages of terramycin, erythromycin, and penicillin were given. Nasogastric suction, blood transfusion, and other supportive measures were utilized.

On the third postoperative day patient developed rales in both lung bases with right lower lobe consolidation. There was calf tenderness on the right with a positive Homan's sign. She was taken to surgery and bilateral superficial femoral vein ligation was done. On pelvic examination at this time done under anesthesia there was no palpable pelvic mass.

There was gradual improvement during the next ten days, temperature, pulse, and respiration having reached normal levels. Abdomen was soft with active bowel sounds. Only pathology demonstrated was elevation of the left diaphragm on x-ray. The patient was discharged three days later.

SUMMARY AND CONCLUSIONS

The foregoing cases represent acute surgical emergencies as complications of initial acute episodes, or acute exacerbations of chronic cases of pelvic inflammatory disease.

The average age in this group of patients was 36 years, the youngest being 19 years of age and the oldest, 50 years of age. Six of the 8 patients had had previous pregnancies. In one case the onset of the disease possibly followed delivery. In 2 cases there was a history of previous attacks of pelvic inflammatory disease. The duration of symptoms prior to rupture varied from two days to four months. In all but one case rupture of the abcess was characterized by sudden onset of lower abdominal pain which grew progressively worse and was associated with nausea, vomiting, and fever. Most frequently the temperature was above 102° (but not without exception).

Culdocentesis is regarded as an important part of the physical examination in that the type of fluid present in the abdominal cavity can be easily determined. This will serve to exclude the possibility of ruptured tubal or cornual pregnancy which can so closely simulate acute inflammatory disease of the pelvis. Other diseases to be included in the differential diagnosis are rupture of an ovarian cyst with intra-abdominal hemorrhage, acute torsion of the adnexa or cyst pedicle, hemorrhage into an ovarian cyst, rupture of appendiceal abscess, rupture of abdominal viscera, e. g. peptic ulcer, and acute pancreatitis.

In addition to blood transfusion and the other customary measures employed in the treatment of shock, nor-epinephrine by infusion is considered invaluable in maintaining physiologic blood pressure in these cases. Prior to the use of norepinephrine many of these cases developed irreversible shock and subsequently died having had little or no response to blood transfusion.

Immediate surgery offers these patients the best hope for survival. This includes removal of accumulated pus from the abdominal cavity with excision of the abscess, uterus, tubes, and ovaries. If removal of these organs is not feasible, then colpotomy or extraperitoneal drainage is done. The abdominal cavity per se is not drained. The abdominal wound is closed with interrupted quilting cotton sutures with rubber drains being placed above and below the rectus fascia.

Antibiotics are used in full therapeutic doses both preoperatively and postoperatively and they have aided greatly in reducing the risk associated with surgery in these patients. Combined use of aqu-

eous penicillin and streptomycin and parenteral terramycin seems to offer the widest range of effectiveness in combating the peritonitis and reducing the possibility of septicemia and bacteremia. Adequate vitamin, mineral and fluid replacement is an essential part of the treatment, special attention being paid to the chemical balance of those patients in whom nasogastric suction is utilized. Anemia should be corrected by free use of blood transfusions.

We feel that these measures together with early surgery have greatly reduced the mortality, the most important being early surgery. Prophylactic treatment certainly is the treatment of choice, i.e. all cases with recognized large tubo-ovarian abscesses should be drained surgically by colpotomy if the abscess points to the abdominal wall, thus reducing or preventing the likelihood of rupture of the abscess. Following drainage of the abcess these patients should have definitive surgery when their condition warrants it to prevent exacerbations of the disease. In a certain few cases, it may be advisable to do primary removal of the abscess and affected organs, w i t h o u t preliminary drainage.

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ACUTE MASTITIS

ARMAND McHENRY, JR., M. D.
MONROE

Inflammatory conditions of the breast are quite common, and yet little emphasis is placed on management. During one's residency in obstetrics, patients are discharged so rapidly that complications of breast feeding are not seen. The obstetrician is consulted first and the responsibility of treatment should be his.

The incidence of acute mastitis in my practice is about 1.5 per cent and of acute suppurative mastitis .004 per cent. However, all the cases except one were in mothers who attempted to nurse. So the incidence in lactating mothers was 4.5 per cent and of actual suppuration .01 per cent.

Improper nursing instructions, as well as inadequate care, predisposes to mastitis. Not infrequently, this condition is preceded by cracked nipples and/or breast engorgement, without proper emptying. This condition is usually seen within the first three weeks postpartum. The symptomatology is well known and consists of painful swelling of the breasts with some discoloration of the skin associated with fever, chills, and malaise.

It is the purpose of this paper to present 20 cases of acute mastitis; only one of which became suppurative. The most important factor is the early recognition of the acute puerperal mastitis and the institution of therapy. All patients received breast binders or the breasts were supported, in addition to application of ice caps to the involved area. Five patients in this series received roentgen therapy as advocated by Elward and Dodek, and none went on to suppuration. The other 15 cases received 400,000 units of penicillin and 1 gram of streptomycin twice daily, in addition to the roentgen therapy. Of the latter cases, one became suppurative. However, therapy was begun after seventy two hours and a questionable area of fluctuation was noted prior to the beginning of therapy. It was thought that x-ray helped this individual. One hundred fifty roentgens were administered by the radiologist per day for three days. This was repeated if any induration or tenderness persisted. Usually one course of treatment sufficed. Two cases had to have two series of treatments and one of these had a small area of induration which gradually subsided. Four patients were able to continue nursing their infants.

The mechanism of action of the roentgen therapy is unknown, but presumably, in small dosages a stimulative effect is produced which aids in the control of the infectious process.

SUMMARY AND ANALYSIS

Acute puerperal mastitis is not seen

during one's residency in Obstetrics and Gynecology because of the early ambulation and discharge of the obstetrical patients. An incidence of 1.5 per cent in private practice was reported. Prophylaxis of this unfortunate condition was stressed. A series of 20 cases was presented. All cases received roentgen therapy and penicillin and streptomycin were administered to 15 of the patients. In conclusion, roentgen therapy is a useful adjunct in the treatment of acute mastitis.

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MEDICAL SOCIETY SCHOOL HEALTH COMMITTEES

Medicine today, as in the past, is striving to meet its ideal of community service. In the course of a half century the situation has arisen in which organization is needed to insure the production and delivery of our product. During the major portion of the past century all the medicine there was could be delivered by the lone physician. In our time, elaborate organization is necessary, and the successful culmination of a single surgical operation represents the cumulative efforts of hundreds of people, many of them physicians. In such an organized effort there is danger that the patient-physician relationship would become endangered. Accordingly, it is greatly to the credit of organized medicine, as it exists today, that strenuous efforts have been made to maintain the patient-physician relationship, while at the same time getting advantage of the benefits that organization brings in any production endeavor.

One of the many ways in which organized medicine has contributed to the needs of community health is the promotion of school health. It is in the school that the future citizen may get and retain his future ideas of the benefits of medicine and of those who dispense it. It is also here that disease may be approached, in many cases in its incipiency; and further, it is here that the habits of health, hygiene, nutrition, and thoughts for the public welfare may be inculcated under conditions that would promise their taking root. Proper consideration of the problems of community health, as well as school health, requires a health council. This is made necessary by the complexity of the factors involved in delivering the product we call health. School health committees then become a vital factor in promoting school health. Their efforts can only be activated by proper medical advice which is delivered from the professional standpoint.

To this end, local medical societies should have active school health committees, fully identified as such, whose purpose is broadly to coordinate the efforts of the profession in the promotion of the health of the school child. The functions of this committee are those of a broad policy making and steering executive body, by which the efforts of the medical society as a whole and of individual physicians are directed to the improvement of child health. The functions include establishing sound policies and procedures to guide development of the medical aspects of the school problem; to develop reciprocal relations with the dental society, health department, parent groups, and other appropriate organizations; to keep

the profession as a whole informed as to the need and progress of the school health program; and to advise the local medical profession and to encourage sanction by the profession of a sound school health program.

The organization and patterns of activity will necessarily differ according to local conditions. The matters which are vital include consideration of methods of health appraisal, examinations, and screening; development of adequate plans of referring cases to the family physician, or organization of other community medical resources where necessary. Other needs are the development of adequate cumulative health record forms and facilitation of the exchange of data among school, family medical adviser, and parents. The handling of school medical emergencies must be anticipated and provided for. Communicable disease control, health, and medical supervision of school personnel, dietary standards, safety standards, precautions and protective measures for play and physical education and for the athletic program, are all useful functions of the school health committee.

It is desirable that the medical society committee should assume leadership in the medical aspects of the program, and a cooperative role in the nonmedical phases. It is felt that the medical society should enter the program in the planning stage and direct the activities of the society in such a manner as to cooperate with existing and currently operating programs of community health already existing.

An example of successful operation of such committees has already been afforded our State in the Parishes of Iberville and Tangipahoa. In these Parishes, Drs. Wm. E. Barker and M. C. Wiginton, respectively, are chairmen of the medical society committee that directed the efforts and produced a noteworthy result.

The Committee on Child Health of the State Medical Society is endeavoring to promote the formation of school health committees in the local societies. Dr. Sims Chapman, New Orleans, is Chairman. His committee feels that the school health movement should be an active part of the program of each local medical society. They also feel that in supporting this program there should be examination of children, education of the public—particularly the parents; cooperation with school health authorities and with the campaign for health records and immunizations. They feel that the individual physician should give assistance in developing, planning, and execution of the school health program whenever possible. They have also recommended that the House of Delegates consider endorsement of the fluoridation of water supply as a means of improving dental health. Another recommendation of the committee is that the legislature be memorialized to provide funds for an evaluation center for exceptional children.

It is apparent in reviewing such endeavors and recommendations that the school health program is a matter of considerable breadth and involves continuous effort. If it is vigorously supported it will pay dividends in health out of proportion to the effort expended. It will also provide rewards in the form of good will toward organized medicine in opposition to socialism and regimentation. It deserves the thoughtful cooperation of every physician.

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The Executive Committee dedicates this section to the members of the Louisiana State Medical Society, feeling that a proper discussion of salient issues will contribute to the understanding and fortification of our Society.

An informed profession should be a wise one.

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AT CHARITY HOSPITALS

Edmund Connely, M. D., Chairman; C. S. Holbrook, M. D.; both of New Orleans; Douglas L. Kerlin, M. D., Shreveport; Arthur D. Long, M. D., Baton Rouge; E. M. Robards, M. D., Jackson.

NOMINATION OF COMMITTEES TO BE ELECTED
AT 1954 ANNUAL MEETING

To be appointed.

PUBLIC HEALTH OF THE STATE OF LOUISIANA

J. D. Martin, M. D., Chairman, Baton Rouge; Boni J. DeLaureal, M. D., New Orleans; Clifton G. Ayeock, M. D., Hammond; Hilton J. Brown, M. D., Franklin; C. E. Boyd, M. D., Shreveport; W. L. Bendel, M. D., Monroe; J J. Stagg, M. D., Eunice; Charles L. Saint, M. D., Elizabeth.

RURAL AND URBAN HEALTH

J. P. Sanders, M. D., Chairman, Shreveport; George H. Hauser, M. D., J. J. Irwin, M. D.; both of New Orleans; Guy R Jones, M. D.; Lockport; Cyril T. Yaney, M. D., Monroe; M. V. Hargrove, M. D., Oakdale; O. B. Owens, M. D., Alexandria; M. C. Wiginton, M. D., Hammond.

SECOND DISTRICT MEDICAL SOCIETY AND
ORLEANS PARISH MEDICAL SOCIETY
(Investigation in re membership)

E. L. Leckert, M. D., Chairman; A. B. Cairns, M. D. A. V. Friedrichs, M. D.; Roy B. Harrison, M. D.; all of New Orleans; M. B. Casteix, M. D., Joseph S. Kopfler, M. D.; both of Kenner.

STATE HOSPITAL POLICIES

W. E. Barker, Jr., M. D., Chairman, Plaquemine;

Philip H. Jones, M. D., Edmund Connelly, M. D., Charles B. Odom, M. D., Edwin L. Zander, M. D.; all of New Orleans; C. S. Sentell, M. D., Minden; George W. Wright, M. D., Monroe.

WOMAN'S AUXILIARY (Advisory Committee)
Roy B. Harrison, M. D., Chairman, New Orleans; J. E. Knighton, M. D., Shreveport; Edwin A. Socola, M. D., New Orleans.

CHAIRMEN OF SCIENTIFIC SECTIONS 1954 ANNUAL MEETING

ALLERGY
Dr. Stanley Cohen, New Orleans

BACTERIOLOGY & PATHOLOGY
Dr. Ralph M. Hartwell, New Orleans

CHEST
Dr. P. R. Gilmer, Shreveport

DERMATOLOGY
Dr. Lee D. McLean, New Orleans

DIABETES
Dr. Joseph W. Wells, New Orleans

EAR, NOSE AND THROAT
Dr. H. L. Kearney, New Orleans

EYE
Dr. H. B. Dozier, New Orleans

GASTROENTEROLOGY
(to be appointed)

GENERAL PRACTICE
Dr. E. L. Carroll, Columbia

GYNECOLOGY
(to be appointed)

HEART
Dr. Sam Hobson, New Orleans

MEDICINE
Dr. N. W. Voorhies, New Orleans

NEUROPSYCHIATRY
Dr. Arthur L. Seale, Pineville

OBSTETRICS
Dr. Jack R. Jones, Baton Rouge

ORTHOPEDICS
Dr. Rufus H. Alldredge, New Orleans

PEDIATRICS
Dr. Eleanor Cook, Lake Charles

PUBLIC HEALTH
Dr. W. P. Gardiner, New Orleans

RADIOLOGY
Dr. L. J. Bristow, Jr., New Orleans

SURGERY
Dr. Morgan Lyons, New Orleans

UROLOGY
Dr. R. M. Willoughby, New Orleans

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FROM THE SECRETARY'S OFFICE AMERICAN MEDICAL ASSOCIATION SEVENTH ANNUAL CLINICAL MEETING DECEMBER 1-4, 1953 ST. LOUIS

The House of Delegates of the American Medical Association, meeting at the Jefferson Hotel in St. Louis during the Seventh Annual Clinical Session took important policy actions on social security, voluntary health insurance, medical ethics and unethical practices, medical education, hospital accreditation, military affairs and a wide variety of subjects affecting both physicians and the public.

Highlight of the opening House session on Tuesday was the announcement that Dr. Joseph I. Greenwell of New Haven, Kentucky, had been selected by a special committee of the A. M. A. Board of Trustees as the 1953 "General Practitioner of the Year." The annual medal and citation for community service by a family physician were presented to Dr. Greenwell by Dr. Edward J. McCormick of Toledo, Ohio, President of the American Medical Association, who also addressed the opening session.

The Tuesday program also included addresses by Dr. James R. Reuling of Bayside, New York, Speaker of the House of Delegates, and Dr. Chester Keefer of Boston, Special Assistant to Mrs. Oveta Culp Hobby, United States Secretary of Health, Education and Welfare. Annual reports were presented by Dr. George F. Lull, Secretary and General Manager of the A. M. A.; Dr. Dwight H. Murray of Napa, Calif., Chairman of the Board of Trustees, and by the standing and special committees of the House of Delegates.

Approving a recommendation by its Reference Committee on Legislation and Public Relations, the House passed a resolution reaffirming its opposition to the compulsory coverage of physicians under the Old Age and Survivors Insurance provisions of the Social Security Act and advocating passage of the Jenkins-Keogh bills now pending in Congress. These bills were described as providing for "the development of a voluntary pension program which is equitable, free from compulsion, and satisfies the retirement needs of physicians."

The reference committee report adopted by the House said:

"The purpose of these bills is to eliminate the discrimination, and inequities

which exist under present tax laws by extending the tax deferment privilege to the country's ten million self-employed and also to millions of employees who are not covered by pension plans. The purpose of the resolution is to reaffirm our support of the voluntary pension program provided in the Jenkins-Keogh bills and to reaffirm our strong opposition to the extension of compulsory coverage of physicians and other self-employed persons under Title II of the Social Security Act."

The same committee report urged continued action to obtain passage of the Bricker Amendment (S. J. Res. 1) and approved the principle of legislation which would reduce or remove the limitation on the deduction of medical and dental expenses for income tax purposes. It also opposed any further extension of the "Doctor Draft" Law beyond the present expiration date of June 30, 1955.

The report said that "your Committee feels strongly that there should be no further extension of the 'Doctor Draft' Law. We feel that the legislation is discriminatory and urge the Committee on Legislation and the Board of Trustees to actively oppose any further extension."

The House acted to accelerate the development of voluntary health insurance by passing a resolution requesting the Council on Medical Service to proceed immediately with a special study of the problems of catastrophic coverage and coverage for retired persons. The Council was asked to present its findings and recommendations to the House not later than the 1954 Clinical Meeting. The resolution pointed out:

"There are two large groups of citizens for whom improved coverage could be offered under present prepaid medical care plans, namely: (a) those individuals who suffer catastrophic or long-continued and highly expensive illness and whose financial resources are not adequate to meet the cost thereof and (b) those citizens who have retired and are living on small incomes and who are not eligible under presently existing public or private plans."

The resolution emphasized the medical profession's "responsibility to make every effort to promote such prepaid medical coverage for all citizens whose circumstances make them eligible."

Another resolution on voluntary health insurance, adjudged to be emergency business by the Reference Committee on Insurance and Medical Service and then passed by the House, stated that "the American Medical Association condemns all insurance contracts which classify any medical service as a hospital service." The resolution reaffirmed previous actions of the House defining pathology, radiology, anesthesiology and physiatry as medical services.

A second emergency resolution, which would have endorsed the principle of federally subsidized scholarships for prospective military personnel in order to encourage the building up of a career-basis medical corps for the armed forces, was referred by the House to the Board of Trustees for study and action.

A resolution introduced by the Iowa State Medical Society, calling for approval of a joint-billing procedure involving services rendered by two or more physicians, was referred to the Judicial Council, at the suggestion of the Reference Committee on Miscellaneous Business, with the recommendation "that the Judicial Council investigate the factors involved in the matter as presented and determine if there are new factors or new facets that would cause it to change the opinion" determined in 1952.

The House approved a revision of one section of the Principles of Medical Ethics of the A. M. A. which clarifies the relationship of physicians to all forms of public information media. The revision had been worked out by the Council on Constitution and Bylaws.

In an effort to solve the publicity problems resulting from unethical practices by a small minority of doctors, the House referred to the Board of Trustees a resolution calling for appointment of a special committee with broad professional representation to study all aspects of the problems. The Board was asked to study and implement the intent of the resolution and to report its findings to the House at the June, 1954, meeting in San Francisco.

To clarify misunderstandings among physicians regarding the rules and regulations of the Joint Commission on Accreditation of Hospitals, especially as they concern the role of the Department of General Practice in a hospital, the House adopted the following resolution:

"That this House of Delegates of the American Medical Association request the Joint Commission on Accreditation of Hospitals to publish an article, or series of articles, in the Journal of the American Medical Association and other official publications circulating among the medical and hospital professions, to acquaint the medical-hospital profession with the regulations, bylaws and their interpretations, and

"That the Commission clarify the methods by which an aggrieved hospital or its staff may appeal a decision with which they are not in agreement."

In the field of medical education the House was "pleased to note" that a fourth grant of $500,000 had been made by the American Medical Association to the American Medical Education Foundation for financial aid to the nation's medical schools. The Foundation reported that its 1953 income now totals $1,174,000 and that the number of contributors now is more than double the total in 1952.

Dr. Louis H. Bauer, of New York, immediate past president of the A. M. A., was elected president of the Foundation just prior to the opening of the A. M. A. Clinical Session. He succeeds the late Dr. Elmer L. Henderson of Louisville, also an A. M. A. past president.

At the opening session of the House, Dr. McCormick in his presidential address made a strong appeal to the nation's physicians for "action that will further the full confidence of the public in our profession."

"Good public opinion cannot be bought," he declared. "It must be earned through exemplary conduct and genuine service in the public interest. Whatever money the A. M. A. and its constituent societies spend for public education and public relations is wasted unless individual physicians take wholehearted interest in assuring the success of these ventures."

Dr. Reuling, emphasizing that much serious work remains to be done, warned that "times are just as troubled as when we had blanket bills before Congress which would have socialized the practice of medicine."

Dr. Keefer told the House that "the voluntary way has been the most successful in the past and there is no reason to believe it will not continue to be in the future." He urged maximum effort, cooperation and leadership on the community level.

Just prior to the Clinical Meeting the Joseph Goldberger award for outstanding contributions in the field of clinical nutrition was presented to Dr. James Somerville McLester of Birmingham, Alabama, a practicing physician for more than 50 years. The award was presented by the A. M. A. through its Council on Foods and Nutrition.

Final registration at the St. Louis Clinical Session was expected to total approximately 7,500, including about 2,700 physicians.

MEDICAL NEWS SECTION

CALENDAR

PARISH AND DISTRICT MEDICAL SOCIETY MEETINGS

Society	Date	Place
East Baton Rouge	Second Tuesday of every month	Baton Rouge
Morehouse	Third Thursday of every month	Bastrop
Natchitoches	Second Tuesday of every month	
Orleans	Second Monday of every month	New Orleans
Ouachita	First Thursday of every month	Monroe
Rapides	First Monday of every month	Alexandria
Sabine	First Wednesday of every month	
Second District	Third Thursday of every month	
Shreveport	First Tuesday of every month	Shreveport
Vernon	First Thursday of every month	

ANNUAL FOUNDER'S DAY FORUM

The Rapides Parish Medical Society will hold its Annual Founder's Day Forum on January 9th, 1954, at the Hotel Bentley in Alexandria.

The program consists of a luncheon, presentation of scientific papers at the Hotel Bentley and a banquet for the doctors and their wives at 7:00 p. m. that evening at the Alexandria Golf and Country Club.

The Secretary of the State Society was privileged to attend the 1953 Founder's Day Forum and can bespeak for all who attend a grand scientific and social treat.

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NEWS ITEMS

Dr. Lucien A. LeDoux was recently elected Chairman of the Board of Trustees of the Southern Medical Association. Dr. LeDoux is Past President of the Southern Medical Association.

Dr. Harry Meyer, of New Orleans, conducted a roundtable discussion at the meeting of the American Academy of Gynecology & Obstetrics, held in Cincinnati December 14-16, on the subject "Economic and Social Aspects of Obstetric and Gynecologic Practice."

PHYSICIANS WANTED

The Kaiser-Aluminum Company of Chalmette needs a plant physician. The company will furnish and supply a clinic for the doctor and there are moderate living facilities in Chalmette and nearby communities.

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Kaiser-Aluminum Company
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Salary up to $10,000 a year.

Dr. Dwight S. Danburg, Superintendent and Medical Director of the Greenwell Springs Tuberculosis Hospital in Greenwell Springs, Louisiana, is in need of a resident physician for the hospital.

POSTGRADUATE CONFERENCE
(Scott and White Clinic)

The Temple Division of the University of Texas Postgraduate School of Medicine announces its forthcoming Medical and Surgical Conference to be held February 22, 23, 24, 1954. The program, sponsored by Scott, Sherwood and Brindley Foundation, will be presented by members of the staff of Scott and White Clinic.

The Postgraduate Conference will be directed primarily toward the interest of the physician engaged in private practice. The morning sessions will consist of operative clinics directed by the surgeons, with consulting internists, radiologists, and pathologists participating; while the afternoon sessions will be composed of roundtable luncheon discussions, panels, and symposia. A formal lecture will be presented each evening, with a banquet-lecture on the final night.

Registration forms are available from the office of the Assistant Dean, University of Texas Postgraduate School of Medicine, The Temple Division, Temple, Texas.

NUMBER OF INTERNS AND RESIDENTS IN HOSPITAL TRAINING DOUBLED

Twice as many interns and resident physicians today are completing their training and furthering their education through hospital work as there were prior to World War II. During the year 1952-53, there were 7,645 interns and 16,867 resident physicians on duty in the nation's hospitals, compared to a total of approximately 12,000 in 1940.

This was disclosed in the 27th annual report on internships and residencies in the United States, prepared by the Council on Medical Education and Hospitals of the American Medical Association. The report appears in the September 26 Journal of the American Medical Association.

To make certain that the American people

obtain the best medical care, the A. M. A. through its Council on Medical Education and Hospitals, accredits only those hospitals for the training of the country's physicians that meet set educational and clinical standards.

It is significant to note, the report pointed out, that the number of hospitals offering approved intern training has increased 12 per cent during the last 10 years, from 760 to 856, while the number of internships available has risen 32 per cent, from 8,180 to 11,006.

PROGRESS IN DEVELOPMENT OF POLIO VACCINES

Further progress in the development of a practical polio vaccine was reported recently by Dr. Jonas E. Salk, research professor of bacteriology at the University of Pittsburgh School of Medicine.

In an interim report made to hundreds of the nation's child specialists gathered at Miami for the 22nd annual meeting of the American Academy of Pediatrics, Dr. Salk disclosed that on the basis of present findings "there may be several possible methods of producing a safe and effective vaccine against polio."

The Pittsburgh scientist, whose studies are being supported with March of Dimes funds from the National Foundation for Infantile Paralysis, revealed that an additional 474 children and adults have been vaccinated with several experimental vaccines. The vaccines used have proved to be completely safe and capable of stimulating the production of polio antibodies.

The new group, ranging in age from three years to over 21, are from Allegheny County, Pennsylvania. Most of them reside in Sewickly and Leetsdale—suburbs of Pittsburgh. This brings the total to 637 subjects who have participated in the study.

Although the several experimental vaccines being used vary in the manner of production or administration, they all are prepared from polio virus of all three types grown in cultures of monkey kidney tissues, and chemically-killed with formaldehyde to render them safe.

BOOK REVIEWS

Surgical Applied Anatomy; by Frederick Treves, ed. 12, revised by Lambert Charles Rogers. Philadelphia, Lea & Febiger, 1953. pp. 590, 206 figures including 66 in color. Price $6.50.

The introductory notes and prefaces in this twelfth edition make for interesting reading. The text is now seventy years old, and Rogers is undoubtedly correct in his belief that it is "the oldest textbook of surgical anatomy written in English to remain in current usage." When it first appeared, in 1883, the original author was both Assistant Surgeon and Demonstrator of Anatomy at the London Hospital. He carried it through the first five revisions. Sir Arthur Keith brought out the sixth and seventh and Professor G. C. Choyce the eighth and ninth. Rogers himself has revised the tenth, eleventh and twelfth editions. All of the editors, like the original author, were anatomists before they became surgeons. From that training, in both subject and sequence, springs much of the excellence of the book. The emphasis has always been, and still is, where it belongs.

The physician who intends to use this book would do well to read the preface to the first edition. Treves assumed, he wrote, that the reader would begin with some knowledge of human anatomy and he therefore omitted most anatomic descriptions. His concern was only "the bearings of the anatomy of the parts upon the circumstances of practice." This has been the concern of all his successors.

Furthermore, Treves intended the book only for certain classes of readers: the student preparing for his final examinations in surgery; "practitioners whose memory of their dissecting-room work is growing a little grey"; junior students who "may have their studies rendered more intelligent by learning how anatomy is concerned in actual dealings with disease." *Surgical Applied Anatomy* is not a substitute, nor was it intended to be a substitute, for the definitive texts on anatomy. It is admirably suited for the purposes for which it was intended, and one may be grateful, among other causes for gratitude, for the convenient format, which makes this book a practical daily companion.

One of the unusual features of this book is the occasional footnotes. They supply a reference, identify a person, or add an odd or interesting fact. The illustrations serve their purpose; they are clear and uncluttered. The writing is both lucid and alive. There are no "dead bones" in this text.

In short, this twelfth edition of *Surgical Applied Anatomy* is warmly recommended for the purposes for which it was intended. Its users do it no service when they attempt, through ignorance or sloth, to go beyond them.

FREDERICK FITZHEBERT BOYCE, M. D.

PUBLICATIONS RECEIVED

Lange Medical Publications, Los Altos, Calif.: Review of Physiological Chemistry, by Harold A. Harper, Ph. D. (4th Edit.);

The C. V. Mosby Co., St. Louis: Pathology, edited by W. A. D. Anderson, M. A., M D., (2nd Edit.);

Philosophical Library, New York, N. Y.; Science and Man's Behavior, by Trigant Burrow, M. D., Ph. D.

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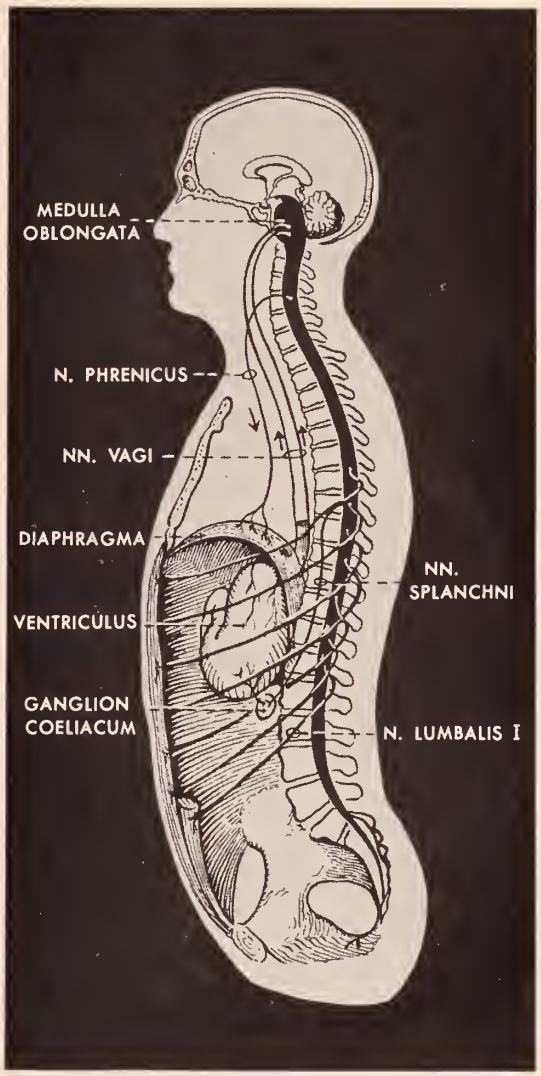
The usual dose for motion sickness is 50 mg. (one tablet) taken one-half hour before departure and, if necessary, before meals for the duration of the journey. Control of nausea and vomiting of other conditions and severe motion sickness is achieved, with minimal drowsiness, by a dosage of 100 mg. every four hours.

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Dramamine Liquid is particularly useful for children.

Dramamine is accepted by the Council on Pharmacy and Chemistry of the American Medical Association.

1. Keats, S.: Ataxic Cerebral Palsy with Akinetic Seizures: Dramatic Response to Dramamine, J. M. Soc. New Jersey *50*:53 (Feb.) 1953.
2. Council on Pharmacy and Chemistry: New and Nonofficial Remedies, 1953, Philadelphia, J. B. Lippincott Company, 1953, p. 471.



THE VOMITING REFLEX: *Vagus → nodose ganglion → solitary tract → spinal cord → cervical, thoracic and lumbar nerves to diaphragm, cardiac sphincter, stomach, abdominal and pelvic musculature. (After Krieg, W. J. S.: Functional Neuroanatomy, ed. 2, New York, The Blakiston Company, Inc., 1953, p. 104.)*

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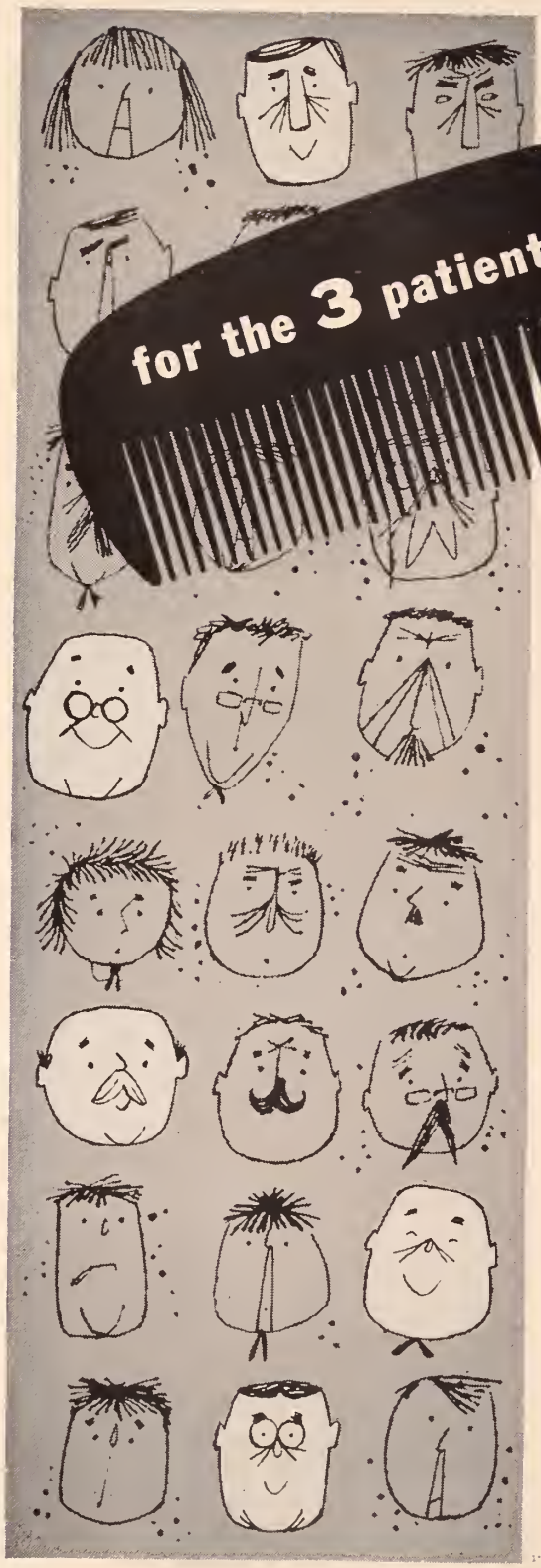
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1. Kauntze, R., and Trounce, J.: Treatment of Arterial Hypertension with Veriloid (Veratrum Viride), Lancet *2*:1002 (Dec. 1) 1951.

2. Wilkins, R. W.: Combination of Drugs in the Treatment of Essential Hypertension, Mississippi Doctor *30*:359 (Apr.) 1953.



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1. Slepyan, A. H. (1952), Arch. Dermat. & Syph., 65:228, February. 2. Slinger, W. N. and Hubbard, D. M. (1951), *ibid.*, 64:41, July. 3. Sauer, G. C. (1952), J. Missouri M. A., 49:911, November.

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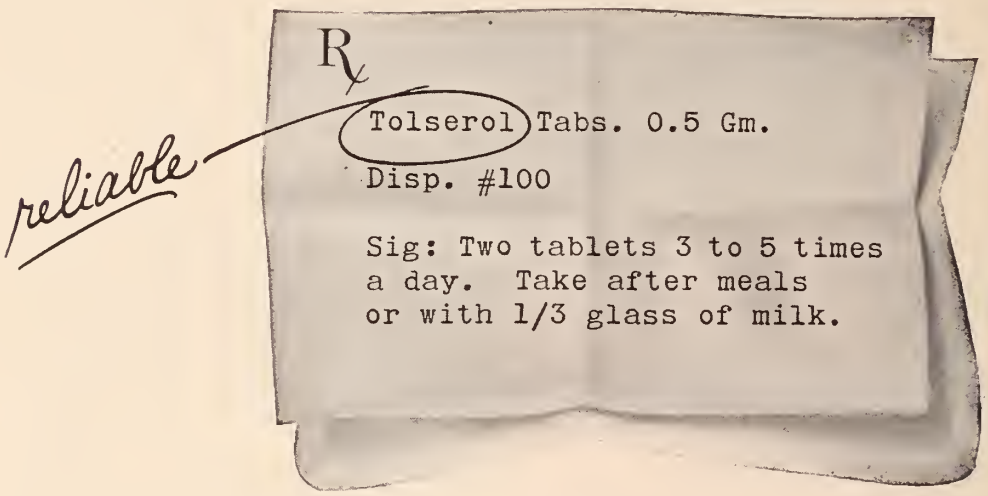
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*Stead, E. A., Jr., in Cecil, R. L., and Loeb, R. F.: Textbook of Medicine, ed. 8, Philadelphia, W. B. Saunders Co., 1951, p. 1065.

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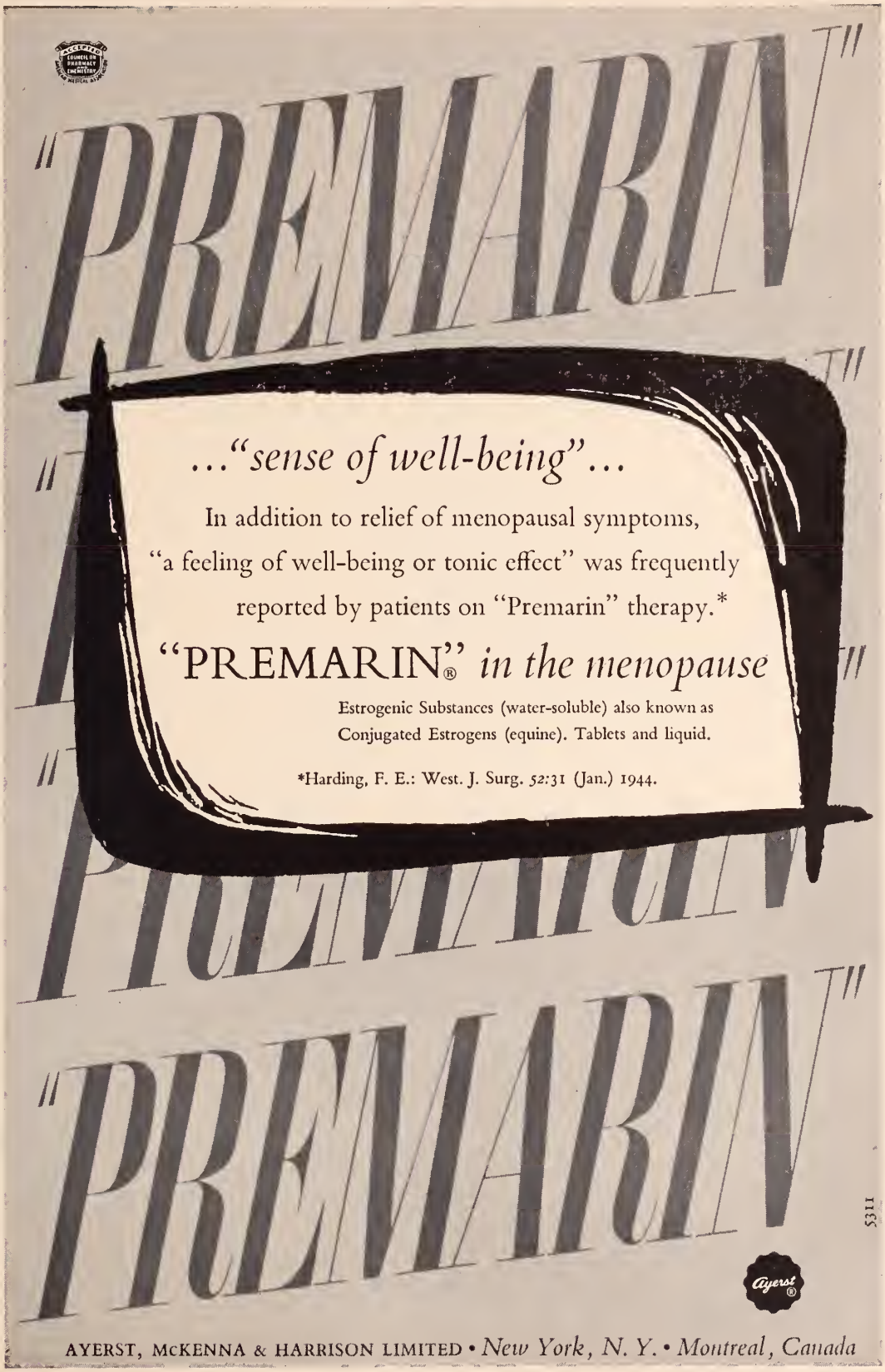
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*Harding, F. E.: West. J. Surg. 52:31 (Jan.) 1944.
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Contrary to the concept that protein intake contributes to the genesis of hypertension and should be drastically reduced in therapy[1, 2, 3] adequate protein nutrition today is considered essential for preserving maximal vigor and a sense of well-being in the hypertensive patient.[3] Meat, once thought to be contraindicated, now is recognized as an important protein food in the dietary regimen in hypertension.

High-protein foods do not elevate arterial tension — neither in the hypertensive nor the normotensive person. Nor does the specific dynamic action of protein make undue demands on the heart.[2, 3, 4] Only in advanced hypertension when renal function is seriously impaired, or in cardiac emergency episodes, when cardiac disease complicates hypertension, is restriction of protein intake below the normal allowance of 60 to 70 Gm. per day justifiable.[2, 3]

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1. Wilhelmj, C. M.; McDonough, J., and McCarthy, H. H.: Nutrition and Blood Pressure, Am. J. Digest. Dis. *20*:117 (May) 1953.
2. Mann, G. V., and Stare, F. J.: Nutritional Needs in Illness and Disease, J.A.M.A. *142*:409 (Feb. 11) 1950.
3. McLester, J. S., and Darby, W. J.: Nutrition and Diets in Health and Disease, ed. 6, Philadelphia, W. B. Saunders Company, 1952, pp. 519-524.
4. Levine, V. E.: The Blood Pressure of the Eskimo, Federation Proc. *1*:121 (Mar. 16) 1942.

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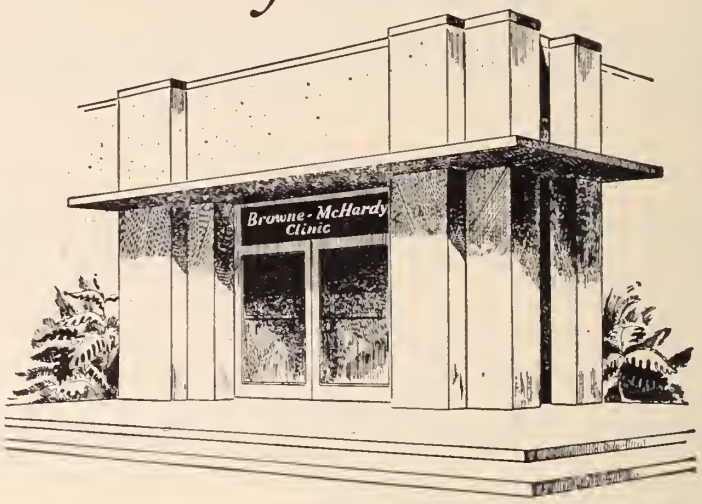
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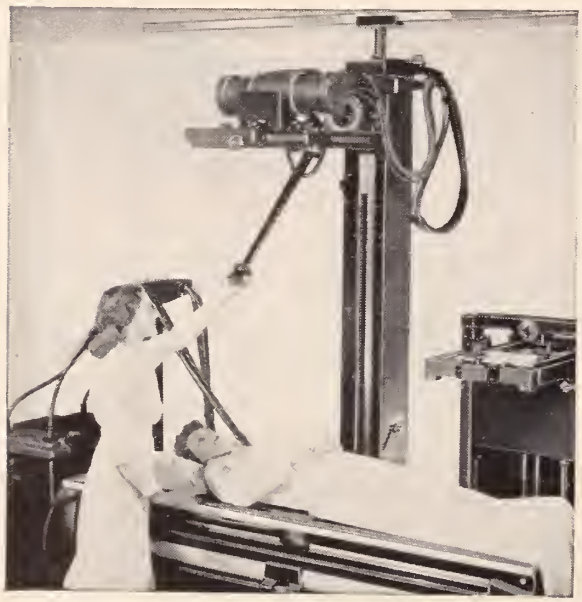
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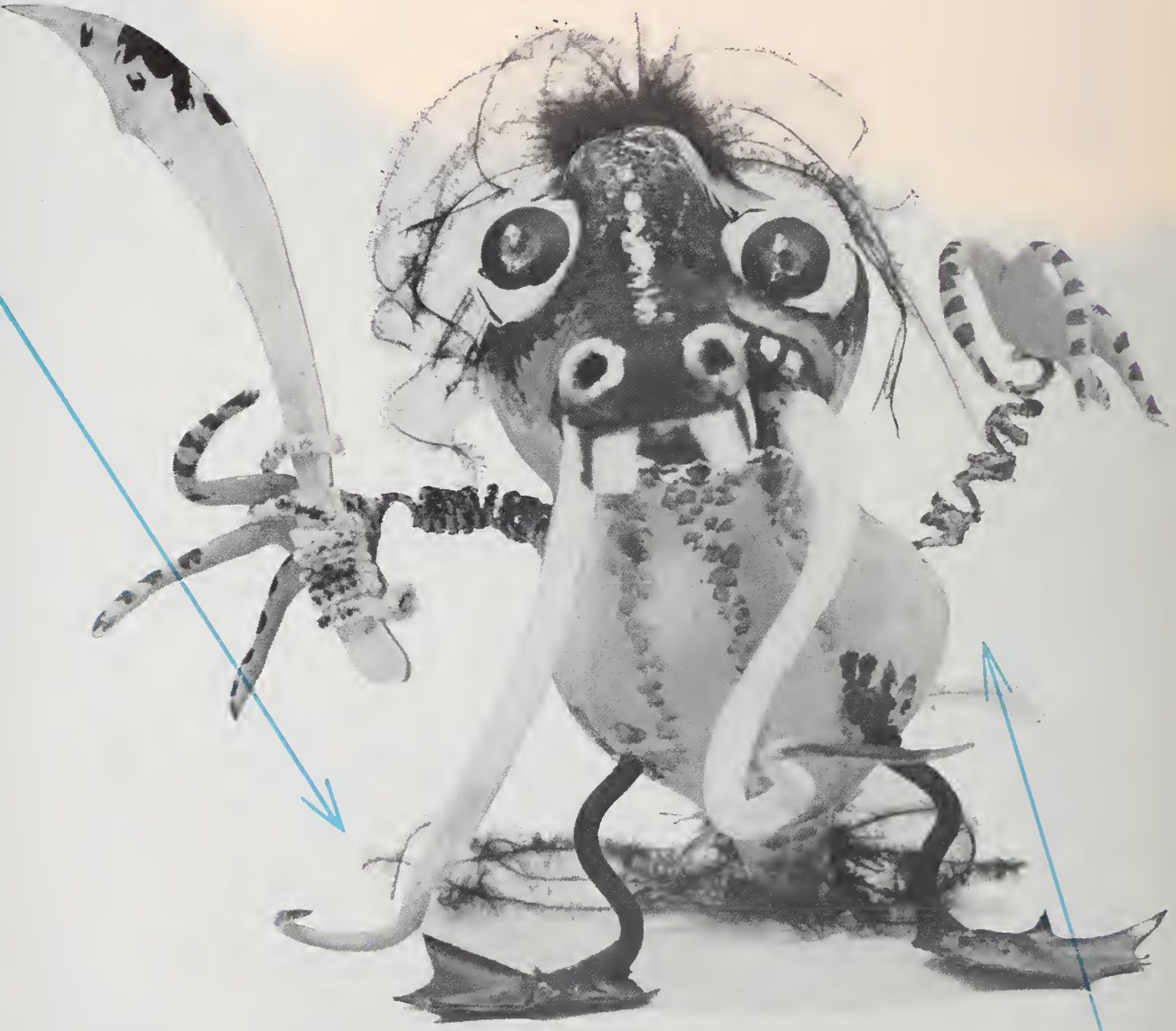
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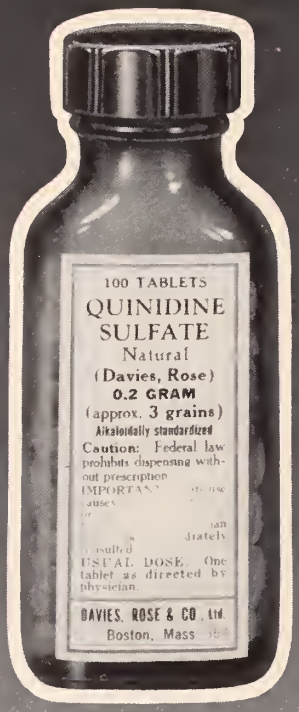
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BATON ROUGE

Fellow members of the Surgical Association of Louisiana, guests, ladies, and gentlemen: First of all, I want to thank you for having bestowed upon me the highest honor of this Association. It is a great pleasure to be here in New Orleans, which City I have always regarded as my second home, and to address you on this august occasion.

I see amongst you some of my oldest and dearest friends whom I love to see from year to year. However, my joy is tempered by a feeling of sadness when I no longer see some of the old familiar faces who have gone to that land from whence no traveler returns. However, this is life. Like the flowers, they bud, bloom, and fade away.

When one has a choice of subject on which to speak, it is difficult to make a decision.

I was reminded of the story of a tramp who applied to a farmer for work. It so happened that the farmer was in need of help and a bargain was made. The farmer said, "Now the first job I want you to do is cut and cord this pile of wood. I will be back around noon and see what you have done." On his return he found that the tramp had finished the job in record time. "Now that is fine—your job for tomorrow is to sort this big pile of potatoes into three piles putting the small ones in one pile, the medium sized in a second and the large ones in a third pile. I will be back at noon to see what you have done." On his return he was disappointed to find that almost nothing had been done and the tramp was sitting down with his head in his hands. The farmer said, "I can't understand why you did such a good job yesterday with the wood and today such a poor job sorting the potatoes." The tramp replied, "Well, the work is all right, but making these decisions is killing me."

I decided to reminisce on the progress I have observed in surgery during the past forty years. In passing, I should like to briefly make a few remarks on the history of medicine.

"Man has climbed up from some lower animal form," says John Burroughs, "but he has, as it were, pulled the ladder up after him."

Our knowledge of ancient medicine is practically nil, but it is highly probable that in all primitive societies, the priest, the magician, and the medicine man were one and the same. As these functions became more specialized and differentiated, religion became the exclusive belief in, and the worship of some universal power greater than man himself.

Magic was a special set of processes within the power of man whereby he sought to predict and control natural phenomena, usually to wreak evil and to work in opposition to the will of the god or gods, and medicine was the attempt to direct and control those natural phenomena which produce disease and death in man.

This religion, through the inhibitions which man put upon himself to attain the

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godlike, became the origin of law and ethics; the secret practices of magic engendered alchemy and other branches of chemical and physical sciences, astrology, and astronomy; while primitive medicine remained more or less stationary among all peoples, always following in the wake of other sciences, until it could utilize the advances made by physics or chemistry.

Garrison, in his history of medicine, quotes Herodotus on the practice of medicine among the Babylonians as follows:

"They bring out their sick to the market place for they have no physicians; then those who pass by the sick person confer with him about the disease to discover whether they have themselves been afflicted with the same disease as the sick person, or have seen others so afflicted, thus the passers-by confer with him, and advise him to have recourse to the same treatment as that by which they escaped a similar disease, or as they have known to cure others. And they are not allowed to pass by a sick person in silence, without inquiring into the nature of his distemper."

I might add that in spite of the great advances in medicine and the array of specialists, the Babylonian system has been handed down to the present day. Well meaning friends and neighbors are eager to diagnose and advise treatment of any malady.

Evidence unearthed by archeologists would indicate that surgery was in advance of medicine. While medicine consisted largely of mineral and vegetable simples compounded with such filthy ingredients as the blood, excreta, fats and visceral parts of birds, mammals and reptiles, surgery was done with the neolithic chipped knife. Circumcision and craniotomy were probably among the earliest operations and apparently the ancients set and splinted fractures with a remarkable degree of skill when you consider that they were dependent entirely on seeing and feeling.

Some ethical precepts of the ancient Egyptian physicians are very much like the Hippocratic Oath in sentiment and expression, and this alone would point to the fact that pre-Hippocratic medicine in Greece had an origin closely connected with Egyptian medicine.

The real foundation and ethics of modern medicine had its beginning with Hippocrates, a Greek, about three or four hundred years before Christ and he is referred to as the "Father of medicine and the greatest of all physicians." Although surgery made great strides, its usefulness was limited by lack of antisepsis and anesthesia.

Koch, Pasteur and Lister laid the foundation of antisepsis in the middle of the 19th century and although it was crude, surgeons became bolder and began to invade the visceral cavities. Theodore Bilroth is credited with being the pioneer of visceral surgery, about 1860.

Time will not permit me to relate more of the ancient history of medicine so I shall now start on the forty year period with which I am familiar. When I entered Charity Hospital in New Orleans, in 1914, as an intern, rubber gloves were not too plentiful and were used in the operating rooms only. Gynecologic examinations rooms only. Gynecologic examinations were done barehanded and I recall that one of my fellow interns developed a primary lesion of syphilis on the index finger of the right hand. Treatment of syphilis was limited to mercury and iodides. This was painful and the duration of treatment was three years. In this connection I remember an expression of my good old professor, Dr. Metz, "Three minutes at the shrine of Venus and three years at the shrine of Mercury."

In the early part of 1915, we first used salvarsan better known as 606. This was quite a ritual as it had to be properly mixed in the hospital drug store and given in about a liter of water. A cut down on the vein and canula was routinely used. Why some one had not thought of venepuncture, as we now give intravenous fluids and medication, is hard to understand.

For postoperative patients who were unable to retain fluid given orally, we used proctoclysis. It was called the Murphy

drip, but it is my belief that our own beloved Professor Rudolph Matas used it before Murphy. Dr. Matas prescribed the drip using black coffee or Coca Cola and glucose in tap water. This was our only means of hydrating patients and while it did save some lives it was a messy affair. Usually the patient was or became distended and the drip was returned to the bed with compound interest. It was quite some years later before a safe and practical means was evolved to give fluid and electrolytes intravenously. At the present time there is but one good use for the Murphy or Matas drip and that is for fecal impaction when the return with the aforementioned compound interest is gratefully received by the patient and the doctor.

For anesthesia, chloroform was rarely used except in Obstetrics, and the ACE mixture (alcohol, chloroform and ether) was on the way out in favor of straight drip ether.

There were no professional anesthetists and all anesthetics were given by interns or members of the surgical staff dripping ether for each other.

Spinal anesthesia was used to a limited degree, but was not in great favor. The drug used was one grain of tropococain. Usually the patient had a chill and fever 104 to 105° with severe headaches. Many left the hospital taking with them the headache and it was not rare for one to leave for parts unknown. Any resemblance of spinal in those days to spinal nowadays with the improved drugs and expert anesthetists is purely coincidental.

Local anesthesia was used very little, as cocaine was highly toxic and had to be used very sparingly. Although procaine was first made by Alfred Einhorn in Germany in 1904, it did not come into general clinical use until a number of years later. Our own Dr. Carrol W. Allen was one of the pioneers in this field.

Chest surgery was practically limited to thoracotomy for empyema. Empyema was very common and we did many thoracotomies before the advent of the antibiotics.

Blood transfusions had to be given by the direct method, having donor and recipient side by side in the operating room. It was a tedious job using a Joubet transfuser. Blood would clot in the recipient or donor needle or both. After a few syringefuls the plunger would stick in the barrel requiring cleansing. While this was being done, blood would clot in the needles and necessitate starting from scratch. Fresh needles had to be introduced into the veins of both donor and recepient. You were better than average if you could transfuse half a pint and expert if you could manage one pint.

The citrate method and blood banks emancipated transfusion making it possible to give large quantities of whole blood and perform operations consuming four to eight hours time. Before this we considered operations hazardous which extended beyond two hours.

The great improvement in anesthesia by a closed system with inlying intratracheal tube has made it possible to do chest surgery which was considered almost certain death twelve years ago.

The discovery of insulin by Banting and Best, in 1921, has made it possible to prepare and operate on diabetics who would most certainly have died previously.

Until the advent of the antibiotics, only a few years ago, osteomyelitis was a serious and disabling disease requiring extensive surgery which frequently was fruitless and futile.

I recall during my intern days at Charity Hospital in the right wing of the second floor of the main building, we had numerous pus cases, notably compound fractures, which we irrigated with bichloride of mercury solutions. This went on day in and day out with very disappointing results. This area was referred to as "Pus Alley," a name which it richly deserved. During my time on this service, I had two colored boys—one with compound fracture of the right arm and the other with compound fracture of the left arm. Both drained pus profusely and both boys looked very much alike. I named

them Jubilee and Jubilum. A few years later, after I began practicing medicine in Baton Rouge, a one armed Negro boy came to my office. He said, "Doctor does you remember me?" I didn't and he said, "I am Jubilee." I then remembered him and inquired about Jubilum. He said Jubilum died. Well that was just about our mortality and morbidity in those days.

I have been privileged to practice in an era that has witnessed many changes and improvements in anesthesia and antisepsis, however, there has not been much change in surgical technique as we have had masters of the art during and before my time.

I recall about 1913 or 1914, I was sitting in the Miles Amphitheater watching our own Dr. Urban Maes, then a very young visiting surgeon, perform an operation. Sitting next to me was a man in shirt sleeves and wearing red suspenders. He remarked, "That young man has a beautiful surgical technique." I later learned that the gentleman was none other than Dr. Charles Mayo.

Fractures of the hip were treated by the Whitman method. That is by abduction, interal rotation, and a plaster cast extending from the nipple line to the toes on the injured side and to just above the knee on the well side. Many of these patients died while incarcerated in the cast and those who survived had stiff joints that required months of physical therapy to restore motion. The alternative to the Whitman procedure was to place sand bags on either side of the injured leg and give morphine as required for pain. The patients developed bed sores, were miserable, and were happy to be escorted away by what Sir William Osler called the old folks' friend—pneumonia.

In New Orleans, we had pioneers in the field. Dr. Denegre Martin had successfully used large carpenter's screws for fixation of the hip and Dr. Parham used his band on certain fractures of the long bones.

Our own Dr. Isadore Cohn appreciated the work of Martin and continued to use the large carpenter's screws with the added refinements of stainless steel and x-ray guidance. As a matter of fact, his work was so successful that he never, to my knowledge, switched to Smith-Peterson or any of the other more recent instruments of fixation.

In 1935, I spent a short time in Chicago observing Drs. Cubbins and Callaghan doing hip nailing. I then observed Dr. Willis Campbell in Memphis, after which I felt confident that I could nail hips. I bought the necessary equipment and returned home.

A few days later an elderly lady was admitted to the hospital with an intracapsular fracture of the hip. I had a hard job selling her family on the operation, but succeeded two or three days later. Although I had no fracture table and only a 10 milliampere portable x-ray machine using a 110 volt current which sometimes dropped to 80 or 90 volts, I had the good fortune of doing a good job.

About a week later, I had a second case but could not sell the family on the idea of an operation. My first case was doing well and in a rolling chair, so I had her nurse roll her in to talk to the second case. The family was amazed to find a patient in a rolling chair with no cast, who had broken her hip only a week ago, and readily consented to operation. My good fortune continued and I was doing a thriving hip business until one day a very elderly man was admitted with an intertrochanteric fracture and acutely ill with pneumonia. I had to do him under local anesthesia and I had no suitable trochanteric extension. He was delirious and it was difficult to restrain him on his return to his room. Needless to say, my work was put asunder. I then resorted to well leg traction which held the fragments in good apposition. The old man recovered, but I was never able to get union and he lived to bear witness to my failure. I received plenty of adverse advertisement. I was thankful that he had not been my first case and I was able to live through this, my first bad result. At that

time Baton Rouge was like the Dutchman's pigs, little, but old. We had no specialist except in eye, ear, nose and throat and pediatrics. At the present time, we are a thriving city of some 135,000 population with all the special fields covered by well trained men.

In my early days we had no Fellowships, but had to learn by preceptorship and experience. One started as general practitioner and worked into his chosen field. The one good feature was that it did give a broad perspective of the patient as a whole.

At the present time, medicine has become so broadened in its scope that no one brain in a normal lifetime can experience and retain the experience of every field of our art. However, the vast majority of conditions can be handled very well and much more economically by good general practitioners who can sort out and refer the unusual things to the proper specialists. The general practitioner has to be well trained and to cover so much territory with very little of the glamor and with smaller fees, but he is indispensable. He may be likened to the private in the army without whom no war could be fought.

The young men of today are fortunate in that so many provisions have been made for special training of which the public is familiar. He is no longer viewed with suspicion and held in abeyance until his hair has grayed to serve as a mark of experience.

I have often heard the expression used "living in the good old days." Well I have lived long enough to experience both eras and I can say with one exception, income tax, we are now living in the good days. I am happy to have lived to enjoy the great advances in medicine, to ride in an automobile, to draw good water from a faucet, to have light by snapping a switch, to have the comforts of heating and cooling, refrigeration of food, and things too numerous to mention.

Last but not least, I enjoy the companionship of the well trained young men with whom I associate and from whom I have learned much. I do hope that in turn, I have been of some help to them.

To recount the advances surgery has made reminds me of the colored pastor who chose to talk to his congregation on the advancement of speed in the past fifty years. He began by saying that in 1900 a good horse hitched to a buggy carried you about seven miles per hour. One of the faithful sitting on the front row said "Amen." Next he said came the automobile making about fifteen or twenty miles per hour. Another "Amen" from the faithful. Later with good roads and improved cars, we made fifty to seventy miles per hour—"Amen." Then came the aeroplane making one hundred to one hundred fifty miles per hour. "Amen." Now we got the jet planes making seven or eight hundred miles per hour—"Gawd Dam!"

THE MANAGEMENT OF URETERAL CALCULI*

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It is not my purpose to review the literature or to bore you with statistics dealing with a series of cases in effort to discuss the problem of ureteral lithiasis. The former is common knowledge to all of you, but the absence of the latter may indeed make this discussion seem a bit philosophical. In spite of this, however, I am simply going to discuss certain ideas which I have with respect to ureteral lithiasis and its management.

DIAGNOSIS

Since most ureteral stones have their origin in the calices or renal pelvis and then course down the ureter, the characteristic story of costovertebral pain with somatic shifting of its location, as it progresses down the ureter, is classically obtained. A carefully taken history is the single most important factor in establishing the diagnosis of ureteral lithiasis. On

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the other hand, the patient may relate no such classical story but may present complaints commonly associated with trigonal irritation, suggesting cysto-urethritis in the female or vesical neck obstruction in the male. On occasion, I have seen patients subjected to prostatic surgery, protracted courses of prostatic massage, or fulguration of the urethrovesical junction, when in reality the agent responsible for the symptoms was that of a calculus located at the intramural ureter. In fact, symptoms pointing to trigonal irritation may present initially, without the appearance of colic, when a small stone has passed down a relatively large ureter producing no obstruction in transit. Gradual ureterectasis with accompanying renal damage may then take place resulting in progressive hydronephrosis and rather insensible renal destruction.

The relative age of the patient is of some assistance in diagnosis of a ureteral calculus in that calculi are more commonly seen in early adulthood. Gross hematuria, though by no means constant, may present. Systemic manifestations of chills and fever depend, to a large measure, on the amount of infection proximal to the point of obstruction.

PHYSICAL FINDINGS

The findings on physical examination vary from exquisite loin tenderness, as seen in acute severe ureteral obstruction, to a complete absence of any findings whatsoever. A marked degree of obstruction is frequently accompanied by a moderately elevated blood pressure.

Depending upon the amount of irritation and infection present, together with the completeness of obstruction, pyuria and a varying amount of microscopic hematuria may be noted. These factors also influence the leukocyte count.

X-RAYS

Of paramount importance, when suspecting a ureteral stone, is the plain film of the abdomen, taken so as to include the kidneys, ureters and bladder made in conjunction with an excretion urogram. The plain film may or may not present a shadow in line with the ureter. The absence of such a shadow by no means excludes the possibility of ureteral lithiasis. The excretion urogram is second in importance to the history in establishing a diagnosis. It allows one to determine the degree of obstruction present, the exclusion or inclusion of certain shadows along the course of the ureter, and often enough, assists in accentuating the shadow cast by a calculus of low radiopacity provided ureteral obstruction is not complete. An angulated film should always be made at the time of adequate ureteral filling in order to accurately include or exclude shadows in question along the course of the ureter.

Retrograde pyelography, in the absence of preliminary excretion urography, is mentioned only to be roundly *condemned.* Furthermore, I have never felt that it should be employed to establish a diagnosis of ureteral lithiasis. If a pyeloureterogram is to be made it should be deferred until several days after removal of the calculus and after institution of ureteral drainage. The forcing of pyelographic media by a point of obstruction is simply to court disaster. Cortical abscesses of the kidney associated with fulminating pyelonephritis and septicemia do not pose the problem they once did, owing to our present antibiotic and chemotherapeutic armamentarium. Yet, I see no need for inviting trouble.

Often one must rely on the history alone to establish a diagnosis of ureteral lithiasis. Frequently it has been the experience of all of us to manipulate and remove a ureteral calculus in the absence of positive findings on physical examination, urinalysis, or as evidenced on roentgenographic study.

MANAGEMENT

The excretion urogram is of inestimable value in determining the course of management to be pursued. If the degree of obstruction is minimal or completely absent one may temporize. If, on the other hand, the amount of obstruction is marked to complete, relief from the obstruction either by passage of ureteral catheters by

the point of obstruction with fixation of the same in place to initiate drainage or actual removal of the calculus becomes mandatory.

The degree of obstruction present, the size and location of the calculus, and finally, the desire of the patient determine the approach to the problem.

As mentioned, in the presence of a high degree of obstruction, it is necessary to decompress the obstructed kidney if renal damage is to be prevented. This may be done either by removal of the stone or by tying in ureteral catheters which have been passed beyond the point of obstruction. The latter course is occasionally necessary in effort to better prepare the debilitated patient, prior to undertaking more definitive action. It is well to explain to the patient, prior to cystoscopy, that the calculus may be forced back into the renal pelvis at the time of catheterization or manipulation, a result which if not well understood, may aggravae the entire management of the problem.

In general, calculi confined to the upper half of the ureter, requiring prompt attention, are removed through a small muscle-splitting incision placed so as to come down directly on the point of ureteral obstruction. On the way to surgery a plain film of the abdomen is repeated in order to make certain of the exact position of the calculus at the time of exploration. The Lloyd-Lewis forcep has proven very useful in fixing the stone in the ureter, assisting in its delivery when the ureter is cut down upon. The ureter is rarely closed. With the muscle-splitting procedure convalescence is reduced to a bare minimum complicated only by rather free drainage of urine from the operative site until the incised ureter has had opportunity to seal over, usually requiring four to five days.

Calculi located in the lower half of the ureter, and more especially in the lower third, are with a rare exception removed through manipulative effort. While there are numerous instruments and devices which have been developed, the Johnson and Councill extractors have proven to be most useful in my hands. The looped catheter has been used with good result in manipulation of ureteral calculi in children. Occasionally one encounters a calculus, of large dimension, considered too large to be manipulated, requiring an open surgical effort. Intramural ureterotomy is ordinarily unnecessary in order to deliver the calculus into the bladder.

It is at times wise to do an initial cystoscopic examination, tying in ureteral catheters solely to produce dilatation about the calculus before undertaking manipulation. Several days later, at a second sitting, attempt is made to manipulate and remove the calculus. Formerly this was the rule rather than the exception. More recently, possibly owing to the added sense of security offered by newer chemotherapeutic and antibiotic agents, the majority of calculi have been manipulated initially. After calculus removal, two number five catheters are tied in the ureter, together with a Foley bag catheter in the bladder to which the ureteral catheters are anchored. These are allowed to remain in place several days so that ureteral edema may subside before their removal.

Occasionally, a second and even a third attempt is made to engage a stone transurethrally. At times, when manipulation has not been successful, and a high degree of obstruction does not exist, one may be content to dilate the intramural ureter as well as the remainder of the ureter distal to the stone, using the Councill stone extractor, with expectation that the calculus will pass spontaneously from the ureter within a week or so after dismissal from the hospital. This approach is not nearly so gratifying to the patient and physician alike as that which results in delivery of the stone into the hands of the family immediately postoperative.

In the event that a high degree of obstruction persists, after an unsuccessful manipulative effort, and should one then be unable to pass the point of obstruction with a ureteral catheter in order to establish drainage, ureterotomy then should be

done rather promptly. The possible presence of contamination proximal to the obstructive point, coupled with the factor of a closed space poses a distinct emergency. There is no problem in urology requiring more prompt attention than a high degree of obstruction accompanied by infection. Failure to employ immediate surgical intervention may result in loss of a kidney or even in death.

In absence of appreciable obstruction one may allow the wishes of the patient to influence the action to be taken, only however, after the various contingencies are fully understood by all parties concerned. This is particularly desirable when the calculus stands a fair chance of passage to the lower ureter. Pressing matters of business or the desire to prevent expense incidental to hospitalization and surgery occasionally enter the picture. Often enough, one is able to spontaneously pass a fairly sizeable stone without resultant damage. Yet, frequently, if the calculus is not passed, days even weeks may be consumed with loss of work and unnecessary endurance of pain only to accept, at a latter date, definitive treatment which should have been actively instituted at the outset. In spite of this, there will always be those who seem bent on convincing themselves first as to the need for action before submitting to prompt management.

One should not allow the wishes of the patient to influence the proper course of action when a high degree of obstruction exists. Needless to say, this problem does not present very often, for the severity of the pain is commonly too great to permit dilatory action.

Success with the so-called antispasmodic drugs in effort to assist passage of ureteral calculi has not been impressive in my experience. These may well be used, however, where expectant management has been chosen.

COMPLICATIONS

Complications attendant to open surgery are those commonly seen where excessive trauma to a ureter has resulted either through "hard luck" surgery or poor management of the problem postoperatively. Great care should be taken to prevent the development of ureteral stricture. Ureterotomy drainage, as with a gall bladder T-tube, is not employed owing to the likelihood of subsequent stricture formation. If one must splint the ureter it is best done by passing the supportive tube up the ureter and down into the bladder removing it transurethrally at a later date. A water tight closure of the ureter, in fact an attempt at closure at all, is rarely undertaken.

Manipulation of a calculus may result in ureteral perforation which need not cause much concern if recognized and the problem at hand carefully considered. Exploration and drainage of the perforated site is only occasionally necessary.

A cuff of the ureter may be pulled into the bladder—a complication too which is not pleasant to behold but again need not be attended by much excitement, particularly if catheters can be passed to the renal pelvis allowing drainage for a few days.

Loss of a filiform tip or even the entire basket portion of the instrument, in the ureter, may be troublesome; however, I have seen these pass spontaneously. Reverse peristalsis may carry these foreign bodies to the renal pelvis necessitating a pelviotomy. Exploration of the lower ureter may be required, or with fortune, one may manipulate, engage, and remove the foreign body transurethrally.

It is well for all patients who have had ureteral calculi removed, by whatever means, to have an excretion urogram made within six weeks to three months following the effort. This time interval varies in accordance with the circumstances attendant to the particular case in question. Similar examinations, over a longer period of time may also be in order. In this way one may prevent and forestall circumstances which could ultimately lead to renal destruction.

Effort should be directed to the prevention of urinary calculi in order to remove

the vicious triad of obstruction, infection, and destruction with which we as urologists constantly do battle. Granted that infection and obstruction have been eliminated there is possibly no factor more important in stone prevention than an adequate fluid intake. Admittedly, there are certain exceptions common to each problem, but in the main, a fluid intake in excess of 3000 cc. daily will do as much as most any other measure to assist these patients in the prevention of urinary calculi.

CONCLUSION

There are few problems with which the urologist is confronted which are more taxing on his professional ability and ingenuity, and none in which greater pleasure is experienced by patient and physician alike than the successful and proper management of a ureteral calculus.

DISCUSSION

Dr. Thomas Latiolais, Jr., (Lafayette): This will be a reiteration rather than a discussion as the entire presentation was very well put, and to the point.

I think that the patient suspected of having a ureteral calculus, regardless of the duration of symptoms or his general state of health, should have a scout film of the kidneys, ureters and bladder and an excretory urogram prior to instrumentation. A diagnostic or operative cystoscopy should be avoided until a definite plan of management is attained. Many times this procedure eliminates instrumentation completely or allows the urologist more time to better evaluate the best procedure for the individual case.

The old dictum, "Stones less than one centimeter in diameter will pass," does not seem to hold true when they are found in the upper ureter, particularly, when the calculus presents irregularity in any degree. There is usually less danger, less expense, less instrumentation and the patient is returned to his normal activity in a shorter period of time, when the muscle splitting operative procedure is done.

Because of the technically more difficult operative procedure, longer morbidity, and accesibility, stones in the lower ureter present a little different situation. Transurethal manipulation is more often the procedure of choice, even with the larger calculi up to 1.5 centimeter in diameter. I find that an adequate ureteral meatotomy allows insertion of ureteral catheters more readily immediately after stone extraction.

At this point I think it advisable to mention "the good old nephrostomy operation" which has pulled me out of a good deal of trouble following unsuccessful transurethral manipulations accompanied by fulminating infection behind the calculus. The peristaltic action of the ureter is still intact when a nephrostomy tube is in place and the smaller remaining calculi will eventually pass spontaneously.

I would like to congratulate Dr. Doss on his excellent, concise discourse and I am really honored in giving this discussion.

CONSIDERATIONS IN BILATERAL CRYPTORCHISM*

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That my subject is not a new one is illustrated by a quotation from the 12th verse of the 19th Chapter of St. Matthew which says, "For there are some eunuchs which were so born from their mother's womb—". Presumably, this includes what we now designate as bilateral cryptorchism or perhaps other alterations of the somatosexual pattern in which the testes are absent from their customary location.

The manifestations are so varied that I find it helpful from a clinical standpoint to consider the problem in a broad way, incorporating:

1. Pseudocryptorchism (migratory testes in infants)
2. Endocrine disorders with imperfect testicular descent (enunuchoids, etc.)
3. Monorchism or anorchism (congenital absence of one or both testes)
4. Ectopic testes (a deviation in descent)
5. True cryptorchism (arrest in normal descent)
6. Intersexuals (altered somatosexual pattern)

In the first four groups, a more or less definitive approach and management has been attained; whereas the latter two entities are complex, for there is still much speculation based on incomplete evidence. The challenge is more intriguing when

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there seems to be imperfect descent of both testes or when there are complicating genital anomalies.

The prime aim in treatment of cryptorchism is preservation of the gonadal function. Irreversible destructive effects are known to occur in the tubular germinal epithelium of the undescended testis which is retained into the pubertal and postpubertal periods. For this reason, and since definition of puberty is uncertain, there are some who now urge completion of endocrine or surgical treatment or a combination of both before the child is five years old. On the other hand, a majority of uncomplicated cryptorchid testes, it is said, descend spontaneously during normal pubertal transformation, and yet it appears that we do not know to what extent the fertility of these individuals may have been impaired.

Errors in judgement or surgical technique may not only nullify the spermatogenic potential, but may actually injure the patient's subsequent mental and physical well-being. Consideration must be given the frequent anomalous separation of the epididymis and vas deferens from the testicle which interrupts the spermatozoal conduit. Moreover, Warren O. Nelson has recently demonstrated by simultaneous biopsy of both testes in unilateral cryptorchids that spermatogenic defects of a constitutional nature affecting both testes are sometimes associated with cryptorchism This is the same sort of disorder encountered in certain infertile men with normally descended gonads.

While much helpful data has been accumulated, the confusion that exists generally is expressed in the lack of agreement as to timing and application of treatment. Only a standardized evaluation of all methods in many hands over a sufficient period of time for adequate follow-up can provide a basis for more consistent premise. It seems logical then to ask how often we can expect our currently prevailing treatment programs to actually preserve spermatogenesis.

The tendency for malignant neoplasm to develop in the cryptorchid testis either before or after orchidopexy is recognized, although there are some who feel that this point has been overemphasized as an argument for early reduction of the testis to scrotal position. Some patients seek treatment to improve their "shower room" appearance or to advance their economic status through compliance with the requirements of employment programs. Repair of the inevitable hernia is accomplished, and the likelihood of torsion of the spermatic cord is lessened. In addition, the testicle is usually placed in a more favorable location to avoid trauma.

Increased pituitary activity reflected by elevated urinary gonadotropin excretion in the postpubertal cryptorchid is evidence that the interstitial tissue also suffers. However, the clinical effects are seldom discernible, and alterations in the histologic picture are slowly progressive. Hence, consideration of this aspect is relatively unimportant.

Our most interesting experiences have occurred in the realm of the intersexes where one finds variance in morphological and germinal sex expression. We were precipitated into a study of this entity in the summer of 1947 by the rapid-fire referral from our Pediatric Department of two "male" infants with hypospadias, bilateral cryptorchism, and clinical evidence of cortical hypoadrenalism. Urologic study, including abdominal laparotomy and gonadal biopsy, proved that these were both genetic females. Excessive androgenic activity of the fetal adrenal cortex during the critical period of sex differentiation resulted in formation of external genitalia of male type while the internal structures were typically female. These were female pseudo-hermaphrodites.

It is thought that through other ill-defined genetic and hormonal influences during intrauterine life male psuedo-hermaphrodites are produced. These individuals have external genitalia resembling a female and gonadal tissue of a male.

True hermaphrodites, sometimes called gonadal intersexes, are thought to result

from genic mutations. They are less commonly encountered and present a variety of alterations in somatic structure as well as mixed pattern of the germinal tissue. As a rule, both testis and ovary are found in the same gonad; however, in rare instances, one may find ovary on one side and testis on the other. There are two such "gynandromorphic" hermaphrodites in our present study. Two others are known to possess ovotestes.

Regardless of the prenatal cause of such postnatal anatomical abnormalities, one is always faced with a series of difficult decisions in reaching an acceptable solution of the problem. Even legal technicalities must be dealt with in the correction of birth certificates in instances where the wrong sex has been mistakenly assigned at birth.

The physician must be alert to the possibilities as soon as he inspects the newborn babe. It is my opinion that all hypospadias must be viewed with suspicion and investigated for significant evidence of intersexuality. Such need is more urgent when there is an associated bilateral "cryptorchism."

Even in infants appropriate urethrocystoscopic examination can be accomplished. Varying degrees of exaggeration of the utricle may be observed; and, indeed, in some it represents the vaginal orifice. If the cystoscope sheath can be inserted, the interior of the vagina is inspected and cervix identified.

Roentgenographic demonstration of the rudimentary vagina and, in some, the cavity of the uterus and fallopian tubes is often helpful. Now and then, we see signs of spilling of the radio-opaque medium into the peritoneal cavity. For this examination we have preferred to use a 15 to 20 per cent aqueous solution of Skiodan injected through the cystoscope sheath, a soft rubber catheter, or directly with an Asepto syringe as the occasion demands.

Abdominal laparotomy must be done to determine the status of the internal genital structures and to identify the type of germinal tissue. Longitudinal axial biopsy is essential since there may be bi-polar accumulation of ovary and testis. Histologic study of serial sections is often tedious and time consuming; for example, Mrs. Octavia Hall, a Research Associate in Physiology at the University of Texas prepared and examined some 300 serial sections of gonadal tissue submitted from only one of our "gynandromorphs."

Having appraised the abnormal somatosexual pattern, a decision must be made in selecting the most appropriate form of readjustment. Although gonadal sex may be known, the general sex-direction of the body tissues as a whole is not usually apparent during the prepubertal phase. Delay in beginning treatment until after puberty often permits development of other difficult problems particularly in attitudes of the patient or his associates. Work is currently underway in the University of Texas Tissue Culture Laboratory directed by Dr. C. M. Pomerat in cooperation with Dr. T. C. Hsu through which we hope to be able to accurately determine the tissue sex of these patients even before gonadal biopsy is done. This accomplishment would be of infinite value since it would permit the earliest possible anatomic reconstruction, psychotherapy, and sociologic adjustment, followed later by well-founded endocrine substitution therapy should that prove necessary. Thus there would seem to be optimum opportunity for these unfortunates to become acceptable members of the society in which they must live. Notoriety sometimes complicates delayed adjustment. An extrovertive attitude which capitalizes on tragedy is rarely encountered in the true intersex. More often these patients are introvertive and depressed and occasionally develop suicidal tendencies.

The physician's burden of responsibility is great in these cases of real or apparent failure of the testes to descend. He must determine whether simple testicular retention or sexual dimorphism is represented. An error in decision may prove costly to fertility in the first instance or in the lat-

ter, where fertility is not a problem, may interfere with optimum sociologic adjustment. Despite incomplete data, the present trend indicates that better results may be obtained if treatment is instituted early in the prepubertal period.

PIROMEN THERAPY IN DERMATOLOGY

A CLINICAL EVALUATION OF 1,029 CASES

JAMES K. HOWLES, M.D. *
NEW ORLEANS

Dermatologic conditions historically have presented physicians with a stubborn problem which often resists conventional forms of treatment. In recent years several new therapeutic agents have been developed which have increased the physician's effectiveness in treating such disorders. Piromen, † a relatively new therapeutic agent, shows promise of being particularly valuable in treating certain forms of dermatitis and may be added to this list.

Piromen is a biologically-active, complex polysaccharide prepared by chemically fractionating cellular material derived from a *Pseudomonas* species. It is nonprotein, nonantigenic, nontoxic, and may be employed safely within an extremely wide dosage range. It is prepared in stable colloidal dispersion for parenteral use. [1]

Injected in proper dosage, Piromen produces a marked neutrophilic leucocytosis, usually within four to six hours.[2] It also stimulates the reticuloendothelial system, and there is evidence of the stimulation of the reticular zone of the adrenal cortex.[3]

There are few and relatively minor undesirable effects from piromen. Occasionally, if dosage has been sufficiently high to cause a pyrogenic reaction, a patient may experience chills and fever, moderate headache, myalgia, or nausea. Aspirin will relieve much of the discomfort.

The literature on previous clinical studies utilizing piromen indicates that the new drug has distinct value in treating allergy and dermatitis.[4-10] There is evidence that many dermatologic cases have a definite allergic etiology, and that in spite of antiallergic management such as diet, desensitization, or avoidance of inhalants, some patients do not obtain satisfactory clinical relief. Piromen therapy is recommended for such patients.

Dermatologic conditions vary in severity and in response to treatment from patient to patient. The success of the treatment depends on the psychological and general make-up of the patient as well as on the therapeutic value of the treatment. Thus, it is possible in some cases to obtain a satisfactory response with the simplest of medication, while in other cases satisfactory results are not forthcoming, no matter what the treatment.

For this reason it is difficult to evaluate the efficiency of any therapeutic agent unless sufficient cases are considered to allow for this human factor. This study is an evaluation of 1,029 cases involving 84 varieties of dermatitis which have been treated over the past eighteen months.

DISCUSSION

In all cases piromen was given as an adjunct to usual topical therapy. Individual dosages varied from 1/2 gamma (microgram) to 6 gamma and the duration of treatment from one visit to nine months of regular weekly visits. The number of injections varied from 1 per patient to 45, the total quantity of the drug from 1 gamma to 116 gamma, and the age of the patients from 2 months to 89 years.

A summary of the disorders involving 79.5 per cent of the total cases is shown in Table 1. The remaining 20.5 per cent is too widely scattered among a variety of dermatologic forms to be clinically significant.

The classification remission includes

* Professor of Dermatology, Louisiana State University School of Medicine, at the time of his death on April 2, 1953. This paper was to have been presented at Annual Meeting of the Louisiana State Medical Society, May 7-9, 1953.

† A product of Travenol Laboratories, Inc., a subsidiary of Baxter Laboratories, Inc., Morton Grove, Illinois.

TABLE 1.

Diagnosis	Total Cases	Remission	Improved and Discontinued	Unimproved and Discontinued	Improved and Still Treating	Unimproved and Still Treating	Discontinued*
Vesicular Dermatitis †	55	35	5	3	8	1	3
Otitis Externa	35	17	3	1	7	2	5
Seborrhoic Dermatitis	94	37	10	3	22	2	20
Acne	120	24	27	6	44	3	16
Contact Dermatitis	173	93	28	6	23	2	21
Pyodermia	120	67	8	1	27	--	17
Leucoplakia	18	2	1	2	8	5	--
Onychomycosis	27	1	5	2	12	2	5
Tinea	126	44	23	6	33	3	17
Pruritis Ani	5	2	----	--	3	--	--
Pruritis Vulvae	7	3	----	--	3	1	--
Erythema Multiforme	9	3	4	1	1	--	--
Uriticaria	12	4	2	--	1	1	4
Lupus Erythematosus (Discoid)	17	1	--	2	8	2	4
TOTALS	818	333	116	33	200	24	112

* Discontinued after first injection. Patient did not return—reason unknown.

† Includes: contact dermatitis which was vesicular; pompholyx; epidermophytosis; and bacterid, vesicular in type.

those cases discharged as cured and those essentially well but who failed to return for additional check-ups. Those listed as discontinued for the most part were patients who were seen once and did not return for further visits.

The category vesicular dermatitis includes: contact dermatitis which was vesicular; pompholyx; epidermophytosis; and bacterid, vesicular in type. Contact dermatitis not vesicular is classified separately. Seborrhea or seborrhoic dermatitis confined to scalp only is classified as seborrhoic dermatitis.

In the beginning of this study piromen was injected intravenously. However, several patients had febrile reactions with nausea which continued for several hours, so intravenous injections were discontinued. Those cases are not included in this study.

Thereafter, patients were given piromen intramuscularly or subcutaneously. A routine therapy was 1 gamma on the first injection and 2 gamma on subsequent injections. At this dosage only one patient had a reaction. She had severe chills and nausea after the first injection of 1 gamma and after the third injection of 2 gamma. The dose subsequently was reduced to one gamma intramuscularly and she had no further reaction.

One other patient claims she had a flare-up after receiving piromen. It is doubtful that piromen was the cause because she did not have a marked febrile reaction. However, she was excluded from further piromen therapy.

For the most part, patients reported a feeling of well-being after an injection of piromen. Their discomfort seemed to decrease and there was accompanying improvement in their mental attitudes. This has been reported by other investigators as well. [4, 11-13]

CONCLUSIONS

The clinical study indicates that piromen is of great benefit in treating a variety of dermatologic disorders, particularly otitis externa. Twenty-seven of 35 otitis externa cases, the majority of them old cases which had failed to respond satisfactorily to other treatment, showed remission or definite improvement after piromen therapy. The results in 5 other cases are unknown and listed as discontinued because the patients failed to return after the first treatment.

H. G., 51, female, had been treated for an otitis externa since June 1948, with x-ray, local applications, and injections of calcium gluconate

and mixed vaccine, without particular benefit. She was started on piromen April 14, 1952, with a 1 gamma injection, then received 2 gamma weekly for five weeks. Considerable improvement was noted after four weeks. She was then given 2 gamma of piromen every second week until August 21, and has had no further complications since that time.

U. R., 58, female, had a severe otitis externa and an eczematoid dermatitis of the ear lobe. Her ear ached constantly. Prior treatment with topical agents had produced little result. She was put on piromen (1 gamma initially) and given 75 r x-ray into the ear canals. Pain disappeared after the first injection of piromen and after a series of 2 gamma injections she was symptom free and required no further therapy.

R. L., 40, female, had an otitis externa of fungal origin. She had been treated since February 23, 1949, by x-ray to the ear canal and with boric acid and alcohol earwash with little result. In October 1951, she was placed on piromen therapy and 2 gamma injections were given every two weeks. The otitis externa was kept under control but did not clear up completely.

Vesicular eruptions, seborrhoic dermatitis, and tinea also responded more quickly under piromen therapy than would have been expected without the use of the new agent. While the value of piromen is not as clearly defined in these cases as in otitis externa, there is no doubt that it definitely improved the therapy.

R. B., 29, female, reported a long period of vesicular eruption of the hands. She was started on piromen, November 2, 1951, with a 1 gamma injection and then received 2 gamma weekly for nine weeks. Improvement was apparent after the first week, and after five weeks her response was extremely gratifying. The patient's hands were clear by January 24, but she was continued on a maintenance dose of piromen, 2 gamma every other week, until March 27, when treatment was discontinued.

J. D., 24, female, had a long history of vesicular eruption of the hands. Prior treatment elsewhere had produced no results. She was started on piromen, November 14, 1951, with one gamma. The dose was increased 1 gamma each week until she was getting 5 gamma weekly. This continued for five weeks, at which time the dose was reduced to 2 gamma weekly and then to 2 gamma monthly. She received thin window light treatment as well. The patient responded well to the treatment until she neglected to return for further treatment. She then had a mild flare-up which again cleared nicely after injections were resumed.

L. B., 63, female, suffered severe itching from seborrhea of the scalp. She also had an otitis externa. She was first seen June 27, 1950, and treatment for a year with x-ray and local ointments produced little improvement. Piromen was added to the therapeutic regimen April 1, 1952, and she received regular 2 gamma injections. She was last seen November 4, 1952, and was very much improved.

C. H., 18, female, had an "id" infection of the hands of tineal origin and fungus of the feet. She was placed on piromen April 26, 1952, with a 1 gamma injection and then was given weekly injections of 2 gamma for four weeks. She showed much improvement after three injections and a week later her hands and feet were clear.

It is more difficult to evaluate the role of piromen in contact dermatitis. Both remissions and exacerbations were noted. Piromen was used in conjunction with topical therapy in all cases and occasionally was given in conjunction with cortisone. However, there were sufficient helpful results from piromen to merit its continued use as adjunct therapy. The same is true of cases of pyodermia, most of which received chemotherapy as well as piromen.

E. C., 31, female, had an early case of contact dermatitis of the hands. Treatment was begun October 11, 1951, with topical applications, x-ray, and injections of calcium gluconate. Piromen was given December 7, with a 1 gamma injection the first week, 2 gamma the second week, 3 gamma the third week, and then the dose was reduced to 2 gamma weekly. Her response to treatment was very good after piromen was given and after three weeks her hands were entirely clear. She was continued on a maintenance dose of piromen until April 2, 1952. She has had no recurrence.

Piromen therapy does not appear very promising in cases of psoriasis, vitiligo, or alopecia. The bulk of the unimproved cases fall in these categories. Neither is the role of piromen apparent in cases of acne. I still use some piromen in treating acne but only as a treatment aid and not with the idea of clearing up the condition through piromen therapy.

SUMMARY

1. A group of 1,029 patients suffering from 84 dermatologic disorders received as adjunct therapy injections of piromen —a nonprotein, nonantigenic, *Pseudomo-*

nas polysaccharide prepared from bacterial cellular material.

2. Piromen proved excellent for treating otitis externa and of definite value in vesicular eruptions, seborrhoic dermatitis, and tinea.

3. The value of piromen in treating contact dermatitis and pyodermia is difficult to evaluate, but there are sufficient indications of its worth to merit its continued use.

4. Piromen therapy does not appear promising in cases of psoriasis, vitiligo, or alopecia, and is of indefinite value in treating acne.

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AN EFFECTIVE METHOD OF PERSONAL ORAL HYGIENE*

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NEW ORLEANS

INTRODUCTION

The purpose of personal oral hygiene (usually called home care of the teeth) is (1) maintenance of oral cleanliness, (2) prevention of caries, (3) prevention of periodontoclasia. It is desirable not only to prevent initiation of the lesions of these diseases, but also to prevent, to the maximum extent possible, further advancement of lesions that already exist. An effective method must fulfill all three of these important purposes.

A clean tooth does not decay. Periodontoclasia does not occur about a clean tooth. Therefore, a method which satisfies well the first purpose named, at the same time accomplishes the other two.

No amount or quality of treatment and restorations by dentists can maintain dental health unless they are followed by effective personal oral hygiene. The success and durability of the dentist's work depend largely upon the subsequent personal oral hygiene of each patient.

Of the many methods of personal oral hygiene now generally followed, none is entirely effective. This statement is confirmed by the fact that practically all adults, and many younger persons, have already sustained more or less damage from caries, and that periodontoclasia lesions are present around many or all of the teeth of practically all adults. This means that the methods of personal oral hygiene generally followed, whatever the source of instruction, are inadequate to prevent these diseases.

Several years ago I designed and described [1] the method of personal oral hygiene which is necessary for prevention of caries and periodontoclasia. It was based upon accurate information, secured mostly through laboratory research, upon the etiological conditions at the locations where the lesions of these diseases originate and advance. Measures for successful prevention must provide for effective prevention or minimizing of these local etiological conditions. Correct information (not merely opinions) as to what these conditions are is necessary. Measures based upon incorrect information, erroneous beliefs,

* Studies promoted by facilities to which the author has had access at the School of Medicine, Tulane University of Louisiana, and by aid for equipment and supplies provided by the University.

or misinterpretation of scientific observations, however authoritative they may seem to be, are unlikely to be effective.

The causative organisms in these diseases are microscopic, the pathological processes originate and advance microscopically, the tissues involved are composed of microscopic elements and the lesions themselves, at first, are only microscopic in extent. Therefore, correct information about these conditions must be based upon microscopic research. Opinions and ideas not conforming to the basic facts, which can be confirmed only by microscopic work, are confusing, often entirely erroneous.

During the past several years there has been opportunity to demonstrate, to their satisfaction, and to teach to a considerable number of dentists, the fundamental facts as to the local etiological conditions in these two diseases. With these facts known and understood, and any previously existing confusion or conflicting ideas cleared up, it is evident to anyone that effective personal oral hygiene is necessary for prevention of these diseases; and to significantly retard or prevent further advancement of existing lesions. It is also evident that methods generally taught and practiced are inadequate and could not be entirely effective.

The necessary method, which I have described,[1] is quite different from, and in some particulars quite the opposite of, ineffective methods generally advocated and followed. Dentists who have the necessary information have their expectations confirmed and are profoundly impressed by the effect they themselves experience personally, and the beneficial effect upon their patients whom they successfully teach. Hundreds of people (including a good many dentists) can be named who now, by this method, are maintaining a degree of oral cleanliness and dental health far greater than is possible in any other way.

The purpose of this paper is again to direct attention to this method, I now having had considerable experience in presenting the fundamental facts upon which it is based, and in teaching the method to a considerable number of people (mostly university personnel). But before describing the method it seems desirable to recall briefly or present important information about the local etiological conditions which must be minimized or prevented and to recall or present some of the fundamental facts regarding the disease processes involved.

Clear understanding of the cause of a disease is necessary for the adaptation of means for its prevention. If the disease be local, such as caries and periodontoclasia, clear understanding of the essential local conditions which cause the lesions and promote their advancement, is necessary for adaptation of means of preventing these local conditions.

BASIS FOR THE METHOD

Locations where enamel caries lesions originate.—Caries lesions of the enamel first appear in the occlusal pits and fis-



Fig. 1: Section of bacterial film from surface of enamel. Enamel cuticle, cu, at left. Note fruiting heads projecting at surface of pad at right.

sures and on the proximal surfaces between the teeth, at locations where there is more or less protection from natural cleaning. They do not originate on surfaces from which foreign material is frequently removed by functional friction or otherwise.

Nature of the material in protected areas. —In uncleaned areas on the teeth there is continuously present a heavy film (Fig. 1) of bacterial material (usually called plaque) consisting of long rod and filamentous types of microorganisms, characterized by having one end attached to the tooth (Fig. 2) and the other extending outward to the surface of the film where there are the growing ends and

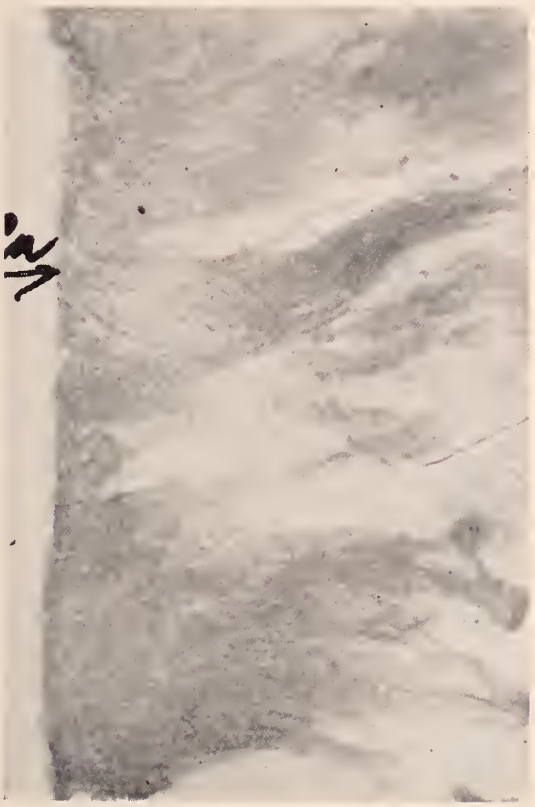


Fig. 2: Section of bacterial film from surface of enamel slightly teased apart to show filamentous type organisms. Enamel cuticle, cu, at left.

usually fruiting heads of the fungi making up the pad. The thickness of this bacterial film varies greatly at different locations, determined largely by the depth of the space and by the exposure to friction by which the ends of the filaments at the surface are frequently rubbed off. At the surface there are not only the growing ends and fruiting heads of the filaments making up the pad but also large



Fig. 3: Bacterial film from over active chalky enamel. Outer part of film brushed off leaving stumps and stems of filamentous type organisms attached to cuticle, cu.

numbers of the very many varieties of other bacteria in the mouth. These are accumulated upon the surface and interspersed, more or less, between the outer ends of the filaments.

Deeper in, however, the pad at any particular place is made up of the filamentous types only, each filament extending outward, at right angles, from the surface of the tooth to which it is attached. Breaking off the ends of the filaments at the surface of the pad still leaves a film consisting of stumps and stems (Fig. 3) attached to the tooth. Most of these are living and capable of growing in length again under favorable circumstances, thus restoring, in time, the former thickness of

the film pack at any given location.

The presence on teeth of filamentous types of microorganisms, usually spoken of as Leptothrix or thread forms, has been long recognized, some authors associating them with caries, others not. More than eighty-five years ago Leber and Rottenstein [2] described filamentous forms of Leptothrix as the "microorganisms of caries." Their Figs. 1, 2, 3 in Plate II, illustrate the organisms and a pad of filamentous forms attached to, and radiating from, a decaying tooth surface.

Wedl [3] in 1870, emphasized the proliferation of Leptothrix in relation to caries and illustrated this in several of the engravings in his *Atlas to the Pathology of the Teeth*, showing uniformly disposed, firmly adherent Leptothrix masses on exposed surfaces of teeth, especialy those at which caries lesions originate.

W. D. Miller [4] in 1883, observed filamentous forms of Leptothrix on the teeth and in caries lesions. He describes, on the border of decaying dentin, indistinguishable masses of fungi from which project numerous threads of *Leptothrix buccalis* (See his Fig. 2). Later, in 1890, in his book [5] on *The Microorganisms of the Human Mouth*, his Figs. 63, 67, 79, indicate filamentous organisms composing the bacterial film on teeth. He was not able to identify these filamentous forms, or any other forms of bacteria found in the mouth, as the specific cause of caries. He evolved his well known chemicoparasitic theory to the effect that acids are produced by the breakdown of carbohydrates by acidogenic bacteria at the vulnerable locations; which acids decalcify tooth material and thereby cause and promote caries. All firm information to this day confirms and supports the correctness of this theory formulated more than sixty years ago.

In a recent survey of the literature relative to the cause of caries Boedecker [6] came to the general conclusion that "intact enamel surfaces in vitro exhibit widely variable resistance to attack by acids produced by acidogenic bacteria. There is no evidence that acidogenic bacteria and carbohydrates can initiate dental caries". (I do not accept this conclusion. Acidogenic bacteria and carbohydrates are essential for the initiation of caries lesions). "The progress of dental caries, once initiated, is effected by bacteria acting during the acidogenic phase on a carbohydrate substrate." "There is probably no specific microorganism associated with dental caries . . ."

The conclusions reached by Bartels [7] from a survey of the recent literature on the subject do not conflict with or contradict Miller's [5] original theory, but rather support it.

The fact that bacterial action on cariogenic food material within the mouth is necessary for production of caries is further substantiated by the work of Kite, Shaw, and Sognnaes [8] who showed that susceptible rats fed a cariogenic diet by stomach tube do not develop caries; and by Orland [9] to the effect that rats maintained entirely free from bacteria, reared upon a cariogenic diet, do not develop caries, whereas controls on the same diet have a high percentage of caries.

The work of J. Leon Williams, toward the close of the nineteenth century, contributed more than all others had previously, to the cause of caries and the microscopic conditions at the locations where the lesions originate. His paper [10] in 1897, not only shed much light upon the microscopic caries process, but it showed clearly the nature of the bacterial film upon the surface of teeth beneath which the caries lesion originates and advances. In numerous photomicrographs (See his Figs. 61, 62, 63, 64, 66, 67, 69, 71, 75) he showed beyond question that the film pack is composed of long filaments radiating outward from the surface of the tooth to which they are attached. His work substantiated the claims of Miller [5] and of G. V. Black [11], that caries is caused by acids produced by conditions at the location of the lesions, and showed the morphologic characteristics of the principal microorganisms composing the film pack.

Later, Williams [12] directed attention to the numerous microorganisms found in material scraped from the surface of the teeth, some of them long rods and filaments, together with many other forms—large and small rods, and coccal forms. He directed attention especially to an organism which had been described previously by Vicentini [13] and named by him *Leptothrix racemosa*. This organism consists of a long relatively coarse filament or stem, attached to the tooth, on the outer portion of which numerous spores are produced. This spore-bearing conidiophore, which they called a fruiting head, is found projecting at, and just beyond, the surface of the film pack.

The striking, characteristic fruiting head serves as a convenient means of identifying the organism. Although it contributes largely to the bacterial film on many teeth, there is no evidence that it bears any specific relationship to caries. However, it is usually one of the several thread-form and filamentous type organisms making up the film on teeth, beneath which caries lesions originate and advance. In many specimens the deeper part of the film is made up largely of the stems of this fungus.

Vicentini [13] claimed that it is present in all mouths. Williams, in his first paper describing it [12], states that it "is common to all mouths which I have examined." I have found it present in material from most of the hundreds of extracted human tooth specimens, from many different sources, which I have examined.

The morphologic characteristics of this organism and the way in which it often makes up a large part of the film pack are shown by Williams [12] by numerous photomicrographs. (See his Figs. 14, 17, 18, 20, 31, 32, 33, 34, 37). I have also shown [1] (See my Figs. 6, 7, 8, 9) how the fruiting heads of this organism tend to project above the surface of the film pack and to accumulate in masses at the surface.

Throughout the literature since the historic paper of Williams [10] in 1897, there may be found numerous pictures of preparations which confirm the fact that the bacterial film on teeth is composed largely of long filamentous forms, each one extending outward from the surface to which they are attached. Since an effective method of personal oral hygiene must be based upon correct information as to the characteristics of this bacterial film, it may be helpful to refer to a few of such illustrations: [10] (Figs. 6, 8, 9, 11, 24), [11] (Figs. 2, 3), [12] (Figs. 82, 84, 109), [13] (Figs. 3, 4), [14] (Figs. 86, 87), [1] (Figs. 4, 5, 6, 7, 8,), [15] (Fig. 3), [16] (Fig. 3), [17] (Fig. 3, 4), [18] (Figs. 86, 87), [19] (Fig. 2), [20] (Fig. 3).

Conditions within cavities.—If the conditions on the tooth which initiate and promote the first stage, chalky enamel, caries lesions continue long enough, sooner or later a cavity develops and advances, usually at an accelerated rate. Active cavities in enamel finally reach, and advance into the dentin; thus progressively increasing in depth and in width.

Cavities, and to a less extent normal pits and fissures, present favorable receptacles for lodgment and retention of food material. The larger and deeper the cavity, the more food material it will hold. Many cavities are never free of remnants of food, and this material is continuously in various stages of decomposition. Before lodgment in the cavity food is heavily inoculated (or contaminated) with the many different kinds of bacteria [5, 12, 20-23] of the oral flora. In the cavity it is exposed to the abundant transient bacterial flora there, arising from decomposition that is going on of previously introduced food material, and also to the more or less permanent or continuous bacterial film lining the base and walls, (Figs. 4, 5) of the cavity.

Such a conglomerate bacterial environment always contains many species which produce acids when growing in the presence of fermentable carbohydrates, and others which do not. Food material (particles) retained within a cavity may, and usually does, contain variable amounts of

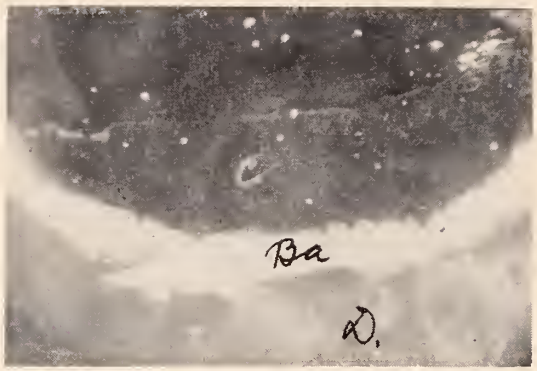


Fig. 4: Section including bottom wall of cavity in dentin, photographed with incident light. Ba-bacterial film, D-dentin, C-remnant of celloidin in which specimen was embedded.

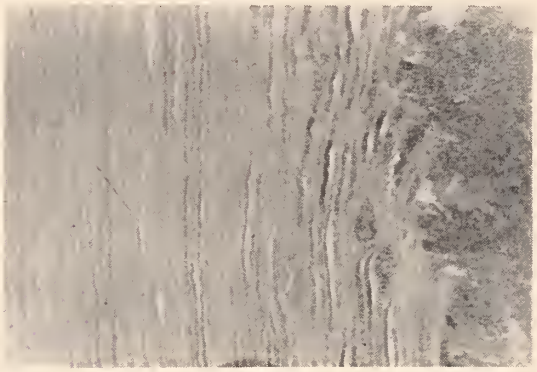


Fig. 5: Section of sidewall of cavity in dentin showing filamentous bacterial pad at extreme right, disintegrating dentin to which film is attached, and spindle shaped expansion of tubules packed with bacteria.

such carbohydrates. In addition to that present in the particular material when it was introduced into the cavity, the carbohydrates may be replenished, more or less, from carbohydrate containing fluids (drinks) taken into the mouth subsequently. The production of acids, upon which caries activity and enlargement of the cavity depend, is determined largely by the retention and break-down of fermentable carbohydrates within the cavity.

The nature of the more or less continuous bacterial film lining the walls of the cavity is of great importance, from the standpoint of oral hygiene for prevention of further advancement of the lesion. This film is made up of countless millions of filamentous type organisms (Fig. 6) similar to those making up the film on the surface of teeth beneath which caries lesions originate. One end of the filament (Fig. 7) is attached to the decaying walls of the cavity, from which it extends outward to the surface of the film, where there are the growing ends and fruiting heads.



Fig. 6: Section of bottom wall of cavity in dentin. Deeper part of bacterial film consists of filamentous type organisms attached to decaying dentin.

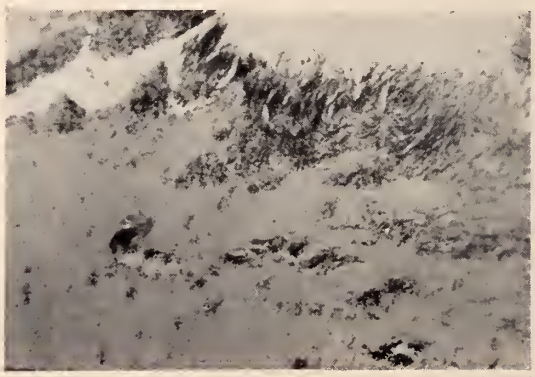


Fig. 7: Section of bottom wall of cavity in dentin. The outer part of the bacterial film has been torn away leaving stumps and stems of the filamentous type organisms attached to the disintegrating dentin.

The thickness of this bacterial film within the cavity varies greatly, depending largely upon the dimensions of the cavity and how frequently and completely its contents are disturbed or removed. Many of the films within cavities in extracted tooth specimens which I have measured range from about 100 to 400 microns (Fig. 8); some considerably thick-

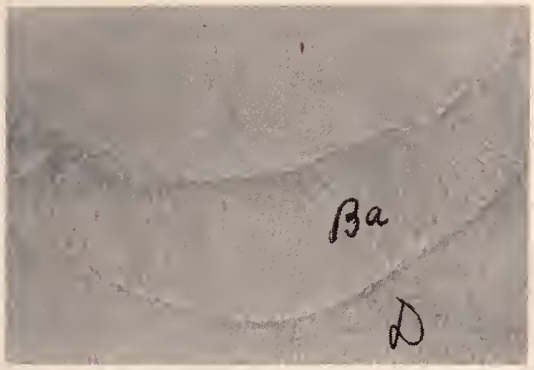


Fig. 8: Heavy bacterial film, Ba, lining bottom wall of cavity in dentin, D. Thickest part of film pad measures 430 microns.

er. Most of the filaments of the different kinds of organisms composing such films are less than 0.5 micron in thickness. Therefore, the attached film within the cavity is made up of millions of separate elements, each of which is many times—usualy several hundred times—as long as it is thick.

Every specimen of decaying teeth shows precisely the same thing. Covering the surface or lining the cavity where decay had commenced there is always to be found a thick, felt-like mass of filamentous types of organisms, each radiating outward from the surface to which it is attached.

Pertinent facts relative to the caries process in enamel.—If a tooth specimen is suspended in a strong solution (5 to 10 per cent) of HC1, the enamel is rapidly dissolved. The enamel cuticle is set free within a minute or two, by the dissolving of the enamel immediately beneath it, and this loosened keratin-like membrane now may be removed or brushed off. If the acid is greatly weakened by sufficient dilution, or by less dilution plus the addition of tribasic calcium phosphate, then decalcification proceeds very slowly; and in the latter case only the carbonates are removed at first[24, 25]. Only partial decalcification occurs. The enamel becomes porous and softened like chalk and it may be dug into easily with suitable sharp instruments. If the quantity of diluted, weakened or buffered acid is frequently renewed, this partial decalcification may extend deep into, or in time all the way through, the enamel. In this way I have partially decalcified the entire enamel cap, which could then be shelled off in large pieces from the underlying dentin. If, on the other hand, all the enamel is covered with wax, except for a limited area, then only the uncovered area which is exposed to the acid is partially decalcified. This corresponds to the natural early stage caries process.

If we use organic acids such as lactic (which is supposed to be the principal one involved in the natural caries process) the same phenomena occur except that, in general, the action is much slower. When such weak acid solutions are used the enamel cuticle remains intact and in place. Thus weak acids pass through the cuticle and the products of their action on enamel pass back out through this very delicate osmotic membrane without destroying or impairing it.

In this way the early stage* lesion in natural enamel caries is produced. Acids produced at the surface of the bacterial film, and perhaps also deeper within it, pass along through this sponge or wick-like material, which we have seen is composed of countless millions of long filamentous type organisms, down to the cuticle and thence through it into the enamel.

This is a long slow microscopic and microchemical process resulting from the often repeated slow action of delicate amounts of weak acids produced on or

* (For convenience the term early stage may be applied to caries lesions before there is any break of the surface or cavity, and advanced stage where a cavity, of whatever size, has developed.)

within the bacterial film at the particular location. Time is required for the passage of such weak acid through the bacterial film, (Fig. 9) at the same time inter-



Fig. 9. Ground section (unstained), very early stage caries. Note variation in depth to which process has advanced in different enamel rods. Also note pad of bacterial film, Ba, at surface.

changing with, and being diluted by fluids of different reaction and composition before it reaches the surface of the tooth which is covered by enamel cuticle. Time is also required for osmotic passage of acid through the cuticle against substances of different reaction and composition resulting from the action of previously introduced acids upon the enamel.

Still more time must be required for passage of the acid into the enamel, especially as the partial decalcification extends deeper and deeper. Not only must the acid pass through the already partially decalcified enamel to the depth of the process but there is a great tendency for this process to follow the course of individual enamel prisms. In suitable preparations under high enough magnification, we usually find the acid action extending along one prism farther than another (Fig. 10) in the immediate vicinity. This means that



Fig. 10: Ground section through farther advanced chalky enamel. Note variation in depth to which process has advanced in different rods and in intensity at different locations.

acid arriving at already partially decalcified enamel passes along the course of the individual prisms until it reaches the farthest point to which previous acid action has extended. Along this course of the prism the minute acid must interchange with products of previous acid action and finally reach the point of activity in effective quantity and strength. Again this is a very slow process. Thus the chalky enamel caries lesion represents the cumulative effect, over considerable periods of time, of minute amounts of weak acids produced, at various times, by bacterial action upon carbohydrate food material at the particular location.

Pertinent facts relative to the caries process in dentin.—If the partial decalci-

fication of enamel (early stage caries lesion) continues to progress, it finally reaches the dentin. Minute quantities of acids produced at the surface now slowly pass through the chalky enamel, especially along the cracks (lamella) and channels that may exist there, thus reaching the dentino-enamel junction and on into the dentin. The caries process in dentin differs substantially from the process in enamel. This results largely from the different composition and structure of dentin.

Dentin consists of about 30 per cent organic matter and water, and 70 per cent inorganic material.[26] Acids remove the inorganic material leaving the cartilage-like dentinal matrix material which is now softer and can easily be cut or torn apart with suitable instruments.

During the dentinal caries activity decalcification advances deeper and deeper into the dentin, and the decalcified dentin at the surface (bottom and walls) of the cavity slowly disintegrates, thus increasing the depth and size of the cavity. Some of the bacteria of different kinds within the cavity grow and advance into the dentin by way of the open-ended dentinal tubules, towards the pulp chamber.

Near the surface of the cavity wall all the tubules are packed with bacteria. (Fig. 11). The pressure of the growing and enlarging mass of multiplying bacteria within the tubules in the decalcified dentin expands the tubules, compresses the decalcified softened matrix material and tends to split and break it up. Dislodged particles of the decalcified dentin are continuously being shed off from the disintegrating surface, thus increasing the depth and size of the cavity. (Fig. 5). Much deeper in only part of the tubules contain bacteria, many others at the same level do not. (Fig. 12). This means that the forward advance of bacteria into the dentin proceeds down separate tubules in-



Fig. 11: Section through bottom wall (at top) of cavity in dentin. Note bacterial masses in softened dentin and some extending into dentinal tubules from surface.



Fig. 12: Bacteria advancing pulpward down separate tubules. Others at this same level not yet invaded.

dependently of other nearby tubules.

The dentinal tubules extend through the dentin from the pulp chamber to the dentino-enamel junction. Their size near the pulp is several times that near the outer surface.[26] They contain long protoplasmic projections (Tomes fibers) [27] from the odontoblasts. In normal vital dentin a nutritional fluid, dental lymph, [28-30] circulates in the dentin, principally through the dentinal tubules and their many anastomosing branches.

Irritation from severe wear, erosion and caries stimulates the formation of secondary dentin (irregular dentin, Orban [26]) at corresponding areas on the pulpal wall. This new-formed secondary dentin effectively closes off the tubules of the involved regular dentin. This is now spoken of as a dead tract. Dental lymph cannot pass through the now closed tubules of the area and bacteria cannot advance toward the pulp, as they can in open tubules.

No doubt laying down of this wall of secondary dentin which closes the tubules and shuts off the passage of dental lymph into them, is nature's most important protection against advancement of bacteria into the tubules, and ultimately infection of the pulp. Bodecker [29] has called these changes "protective metamorphosis."

Cervical Caries.—The cervical caries lesion begins at the cemento-enamel junction, and only after the gum has receded enough to expose the area. For unknown reason some people seem to be especially susceptible to this type of lesion. This is probably related to varying relationships in the area where enamel and cementum join. [26-31] In some instances their edges do not quite meet, thus leaving an area of dentin covered only by soft tissue. After this is removed there is left an area of exposed dentin with open-ended tubules, which does not have the usual protective covering of either cementum or enamel. They are now open to invasion by bacteria.

In other instances the cemento-enamel junction presents a V-shaped groove of considerable size which, after the soft tissue is removed, offers a favorable situation for accumulation of filamentous type bacteria, as occurs elsewhere in grooves and depressions.

Whatever the special conditions may be that initiate the cervical caries lesion, it advances into the dentin in much the same way as do lesions originating in the enamel after they reach dentin.

Inactive Caries (Arrested Caries).—Caries lesions usually begin at the vulnerable locations during the first two or three years following eruption of the particular tooth. If the local etiological conditions which initiated the lesion continue, the disease process continues to advance. In time a cavity (advanced stage lesion) develops large enough to be recognized by the patient or by the dentist. The preceding early stage chalky enamel lesion has existed and progressed unrecognized for months previously.

If at any time, the local conditions which cause the lesion and promote its advance are prevented or altered sufficiently, the progress of the disease process slows down or stops entirely. This may occur at any stage of the lesion from the earliest (microscopic) chalky enamel stage to the advanced cavity stage. Obviously the earlier this occurs the less damage will have been done.

A large part of all proximal caries lesions stop advancing—become inactive—before cavities are formed. Often small cavities in this region also cease to advance. This slowing down or cessation of proximal caries activity coincides with the incidence and increasing activity of periodontoclasia in the same region. Bibby [32] has recently reviewed the literature relative to the apparent antagonism between caries and periodontol disease. The available information cited tends to support some such antagonism.

Gingivitis is characterized by a continuous flow of minute quantities of inflammatory exudate which consists of serum containing pus cells and some blood cells. Constant presence of such exudate in the

environment of the caries lesion between the teeth tends to neutralize and counteract the effect of minute quantities of weak acids in the area. It is possible also that it may influence the local bacterial flora and promote the growth of proteolytic bacteria in the environment, thereby lessening acid production by acidogenic bacteria. On the other hand, periodontoclasia has little or no influence upon occlusal caries. Inflammatory exudate does not reach the area in effective amounts and concentration.

Early stage caries—chalky enamel—always appears pure white throughout the life of the tooth, as long as the cuticle remains intact. Usual stains of the mouth do not pass through normal cuticle. On the other hand, chalky enamel from which the surface has been destroyed becomes stained—usually varying shades of brown. Stains are also carried into chalky enamel through cracks (lamella) and other channels that may exist there. The staining of such lesions tends to increase, although they may remain inactive, throughout the life of the tooth. Usually chalky enamel lesions which had advanced sufficiently to be stained because of loss of cuticle or penetration of lamella or small cavities remain white around the borders in areas in which the cuticle is still intact.

Occlusal caries lesions start at the entrance and sidewalls of occlusal pits and fissures of molars and bicuspids where the depressions favor accumulation of bacterial film, retention of food material, and production of acids. The partial decalcification—chalky enamel stage—progresses and finally cavities develop. There is a tendency for the decay process to extend down any channels and after it reaches the dentin, to spread and undermine the enamel along the dentino-enamel junction.

Extensively undermined enamel may crack off leaving the decaying dentin widely exposed. Bacterial film and food material in such wide open occlusal cavities may be disturbed or rubbed off several times every day. Occasionally dentinal decay in wide open cavities ceases to advance and the dentin becomes very hard, similarly to the way in which dentin exposed by severe wear becomes almost as hard as enamel. This is an example of what often happens when such a wide open cavity is frequently cleaned out by whatever means.

Sometimes radical changes in diet habits or in oral hygiene habits and methods at any time, may slow down or stop the activity of early stage occlusal caries lesions. However, in most instances, no such circumstance arises, especially during the age period (up to 12 or 15 years of age) of greatest activity of such lesions.

Periodontoclasia-Definition. — Various terms have been used to indicate the disease process encompassed by periodontoclasia. Such terms as periodontal disease, periodontosis, periodontitis, pyorrhea, pyorrhea alveolaris, alveolodental pyorrhoea, Riggs disease, gingivitis have been applied to the disease in general or to some particular phase or prominent clinical condition. The disease is characterized by inflammation and suppuration of the epithelial tissue within the gingival crevice, and by long continued progressive chronic inflammation in the parodontal tissues resulting in destruction and resorption of periodontal fibers and alveolar bone.

Periodontoclasia is caused by foreign material, consisting of bacterial film and/or concretions (mostly calculus) upon the surface of the tooth at the entrance to, and within, the gingival crevice. Prevention of the disease and prevention of further progress of existing lesions can be accomplished only by preventing or minimizing these local etiological conditions—conditions without which lesions do not originate or advance.

Early stage of the disease.—All periodontoclasia lesions begin at the gingival margin and are, at first, only microscopic in extent, therefore not recognized.

It has been pointed out [1, 10, 12, 14] and emphasized above, that bacterial film (plaque) on protected areas on the surface of the tooth consists of a pad of filamentous types of micro-organism, one end attached

to the tooth and the other extending outward towards the surface of the pad. At the surface of the pad there may be found more or less of any and all of the many other kinds of bacteria in the mouth.

At the entrance to the gingival crevice this bacterial material tends to grow or advance into the crevice and to impinge upon the epithelial surface there. The deeper part of the bacterial material continuously present upon the tooth tends to harden, calcify, and form rough concretions there. (Fig. 13). Normally, the marginal gingival tissue rests upon the soft smooth non-irritating enamel cuticle. Hard, rough material superimposed upon the cuticle acts as a mechanical irritant like a foreign body.

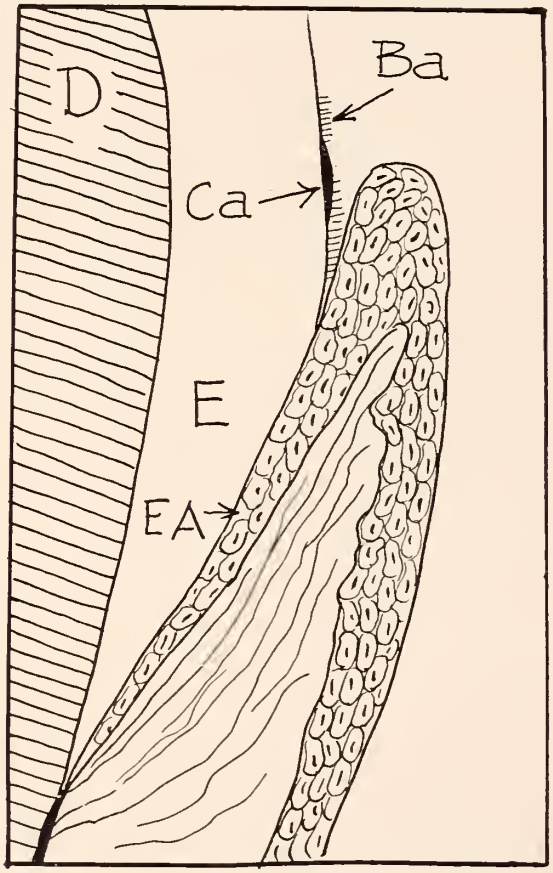


Fig. 13: Drawing to indicate foreign material at entrance to gingival crevice in early stage periodontoclasia. Ca-calculus, Ba-bacterial film, E-enamel, D-dentin, EA-epithelial attachment.

Soon the gingival margin is irritated by this foreign (and perhaps toxic) material against which it rests. Inflammation of the epithelial tissue ensues, characterized by migration of polymorphonuclear cells through the affected tissue (Fig. 14) to the point of irritation, where they tend to accumulate as pus cells.

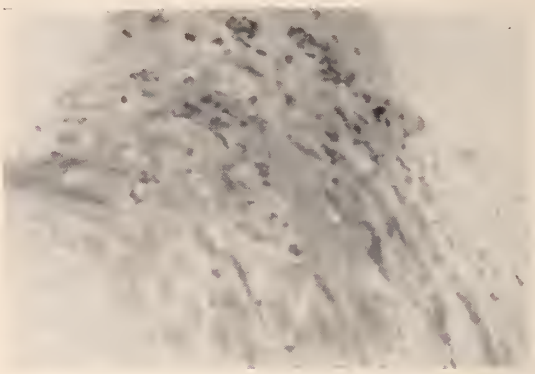


Fig. 14: High magnification of section of marginal gingiva showing polymorphonuclears passing through the epithelial tissue at right which was in contact with irritating material on tooth. Good oral epithelium at left.

At first the amount of inflammatory exudate, which consists of pus cells and serous fluid, is not sufficient to be recognized by the unaided eye. However, material properly collected from the location always contains pus cells, upon microscopic examination; and, sections always show polymorphonuclear cells passing through the epithelial tissue opposite the irritating foreign material on the tooth against which it rested.

As the inflammation continues the bacterial film on the tooth tends to extend deeper and deeper into the gingival crevice, (Figs. 15, 16) the amount of the associated calculus on the tooth within the crevice increases, and there is increase in the amount of pus produced. The inflamed· slightly congested and edematous condition of the marginal gingiva may now be recognized upon careful examination. It bleeds easily upon slight pressure or manipulation. The condition may now be noticed by the individual and by the dentist. Usually the importance and significance of gingivitis, as the early stage of the periodontoclasia lesion· is not recognized. However it is, in fact, the begin-

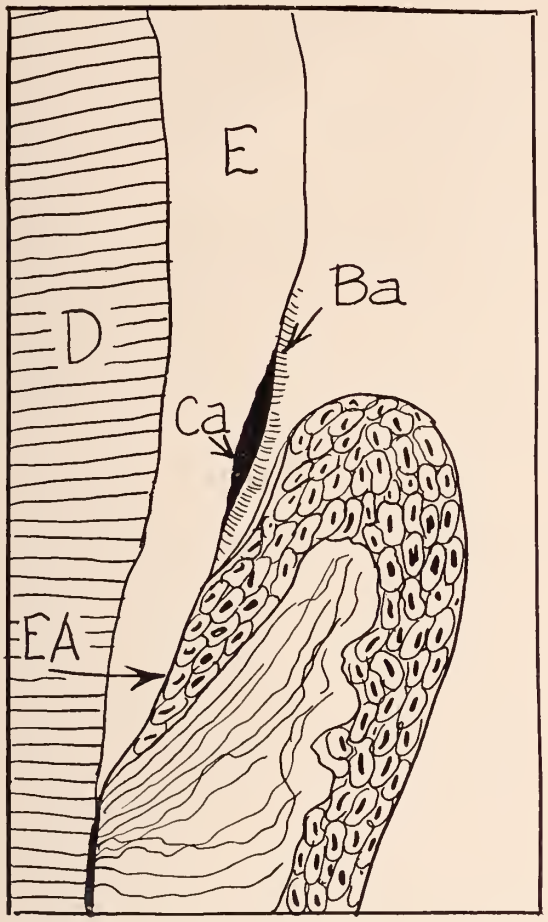


Fig. 15: Drawing to indicate foreign material within the gingival crevice in an advancing periodontoclasia lesion. Ca-calculus, Ba-bacterial film, E-enamel, D-dentin, EA-epithelial attachment.

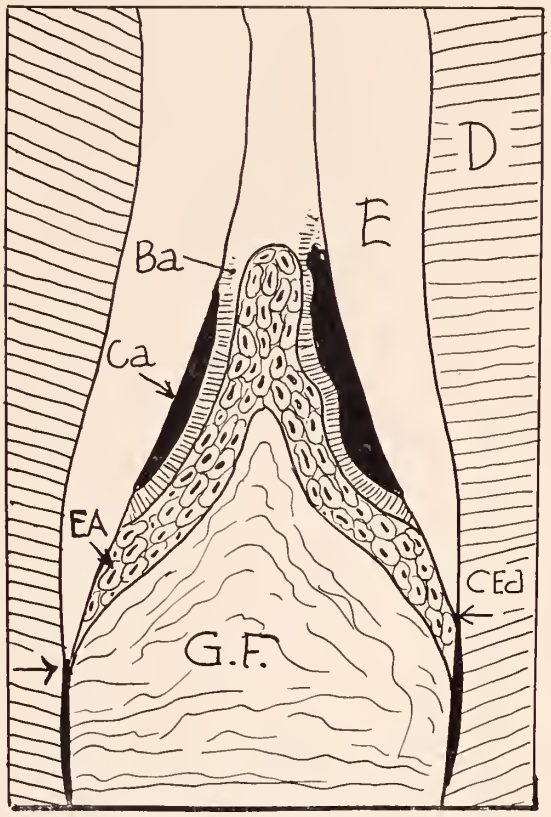


Fig. 16: Drawing to indicate foreign material within the gingival crevices in advancing interdental periodontoclasia lesions. Ca-calculus, Ba-bacterial film, E-enamel, D-dentin, CEJ-cemento-enamel junction, GF-gingival fibres.

ning of a progressive pathological process which never ends spontaneously, until the tooth is finally lost. The origination, activity, and rate of advancement of early stage lesions, and also, of the more advanced stage lesions, are determined largely by the effectivenes of the personal oral hygiene habits of the individual. These vary greatly with different individuals, at different times, and as applied to different tooth areas.

Nature of the subgingival bacterial film and calculus.—Once the foreign material (bacterial film and calculus) has advanced into the crevice and inflammation is set up there, more or less inflammatory exudate is continuously present in the crevice thereafter. This exudate consists of diluted serum (lymph) containing pus and blood cells. It provides a favorable environment for the establishment and growth of types of micro-organisms which are favored by partial anaerobiosis and by the serum-rich substrate. Such filamentous type organisms as actinomycetes and certain leptotrichia are encouraged.

Subgingival calculus consists of calcified bacterial material.[33, 34]. The inorganic portion is derived from the inflammatory exudate (serum). The bacterial portion consists largely of filamentous types of microorganisms, especially actinomyces.[35]

A pad or film of filamentous type organisms is always present on the surface of the tooth, and on the surface of any calculus, within the periodontoclasia pocket. (Fig. 17). This constantly present

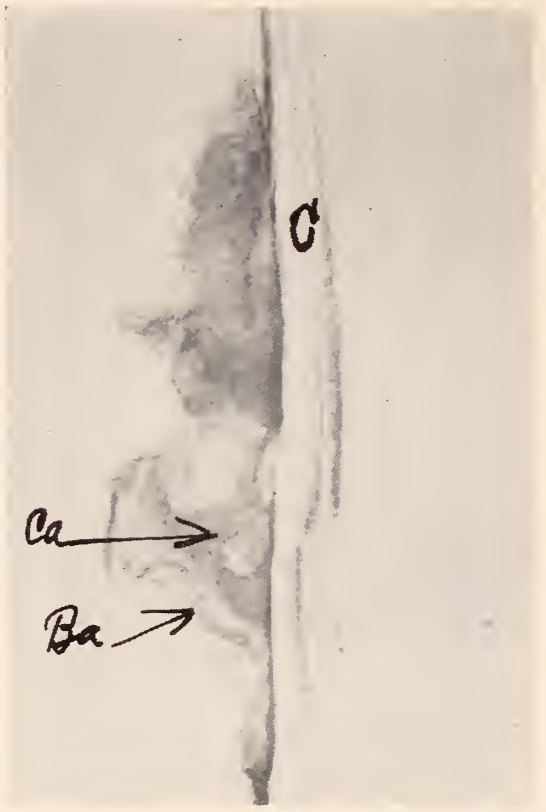


Fig. 17: Section through foreign material, which was located on the tooth within the periodontoclasia pocket. C-cementum, Ca-calculus covered by heavy lighter-colored bacterial film Ba.

bacterial film is composed of long filaments with one end attached to the tooth or to the calculus, (Fig. 18) and extending outward in palisade form to the surface of the pad which is in contact with the inflamed crevicular epithelial surface. At the surface of the pad there are the growing ends and fruiting heads of the particular organisms composing the film pack.

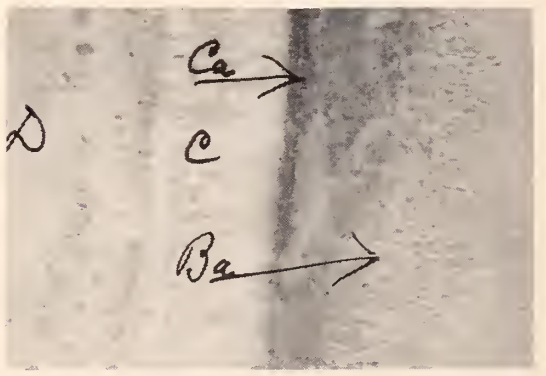


Fig. 18: Section through side of tooth which was located within the periodontoclasia lesion. C-cementum, D-dentin, Ca-calculus (darker) covered by filamentous type bacteria Ba, right. Note dark previously undescribed pathological [89] granules in dentin.

One of the important thread form organisms usually found in the pyorrhea pocket was first described by Beust [36] and named by him *Leptothrix falciformis*. He later [37] called attention to this organism in material from about the teeth, and pointed to the association of it with spirochetes.

I [38] have observed that the habitat of *Endameba buccalis* is the outer surface of the filamentous bacterial film on the tooth within the periodontoclasia lesion. "There they are protected and live, grow and multiply among the strands and fruiting heads of leptotrichia, principally *L. falciformis*." This observation conforms with the observations of others [39-42] as to the distribution of this parasite in the periodontoclasia lesion. Kofoid [39] confirmed especially the observation [43] that ameba are most numerous at the very bottom of the pyorrhea pocket. This ameba cannot be the specific cause of periodontoclasia, as sometimes has been erroneously supposed, for the reason that it is found in the lesions of not more than about 50 per cent of adults under 30 years of age. This does not necessarily mean that the parasite may not be harmful whenever it is present.

The fact has been shown [44] that the film pack is composed of filamentous types of micro-organisms, largely leptotrichia, attached to the surface of the tooth or to the calculus within the periodontoclasia lesion and that there is a tendency of the fruiting heads of *L. falciformis* to extend into the deepest part of the lesion. This conforms with observations of Box [45] in this regard.

It has been observed [44] also that the film pad of *L. falciformis* in the deeper part of the periodontoclasia lesion, and the conditions there, are especially favorable for the growth of spirochetes. These

are found in greatest abundance upon and among the fruiting heads of the leptotrichia at the very bottom of the pocket, and therefore overlying the zone of disintegrating epithelial attachment cuticle (zdeac).[46] This zdeac serves as a useful landmark which accurately indicates, on extracted tooth specimens, the location of the outer border of the epithelial attachment and the bottom of the periodontoclasia lesion[47] at any place around the tooth when it was in situ. The great abundance and constant presence of spirochetes at this location, which is where the lesion is advancing on the surface of the tooth—the location where the outer border of the epithelial atachment is receding apexward—suggests the possibility that spirochetes have some etiological significance in the advancement of the lesion.

While the flora and fauna tend to be limited to fewer varieties in the deeper part of the pocket, the entrance to the crevice and the part just within, are constantly exposed to infection and reinfection by any and all of the many species in the mouth. Material collected from this location always contains more or less of such mouth organisms. It is interesting to mention also that this location is where fusiform organisms are most abundant in mouths in which they and associated spirochetal organisms predominate.

Apexward advancement of the subgingival bacterial film and calculus.—The subgingival bacterial film and/or calculus tend to continuously advance apexward at various rates at different locations on a given tooth and on different teeth in the same mouth. As a result of the inflammation, suppuration, and destruction of the parodontal tissues which this foreign material on the tooth within the crevice causes, the location of the epithelial attachment moves apexward,[47, 61, 66] thus deepening the pocket and leaving more and more of the tooth without its normal soft tissue covering. Such bared tooth surface is always entirely covered with bacterial film right down to the outer border of the epithelial attachment.[44] Calculus formation follows along not far behind.[48] However, there is always a narrow band or space, of variable width, between the inner (or deeper) border of the calculus and the outer border of the epithelial attachment.

The epithelial atachment consists of a thin band or cuff of epithelial cells surrounding the tooth. The width of this cuff varies at different locations. It is widest when it is located on the enamel and becomes narrower as it moves apexward[46, 47]. Waerhaug[49] has presented strong evidence that what has been called the epithelial attachment is, in fact, not organically attached to the surface of the tooth and that a delicate instrument can be passed, with little resistance, into the gingival crevice all the way to the cementoenamel junction. Baume,[50] through phase contrast microscopy, finds evidence that enamel epithelial cells are very delicately

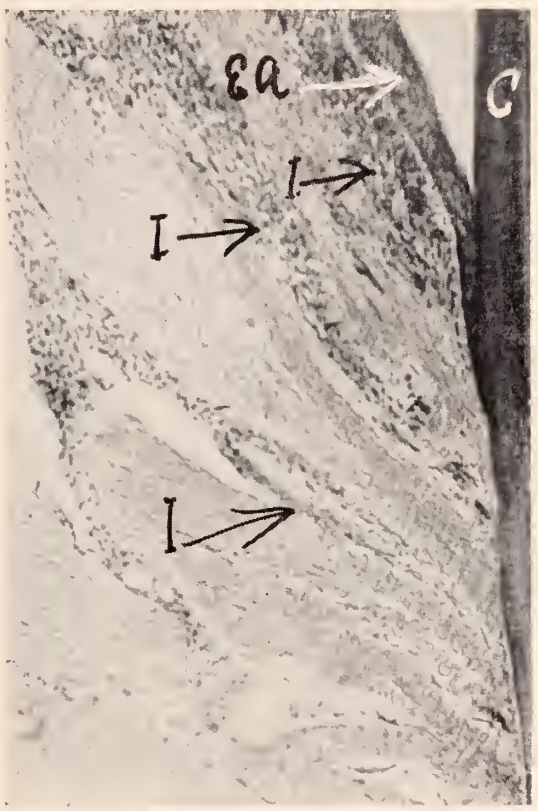


Fig. 19: Epithelial attachment EA, advances apexward over cementum, C, from which periodontal fibers have been destroyed. Note inflammatory cell infiltration I among fibers. (Attachment pulled away from cementum at top.)

attached to the tooth surface by tonofibrils, and that similar fibrils hold together the cells of enamel epithelium, and also those of the adjacent oral epithelium.

The inner border of the epithelial attachment grows apexward to cover over cementum from which periodontal fibers have been destroyed and removed (Fig. 19). As more fibers are destroyed, the epithelial attachment advances farther. Destruction and resorption of the periodontal fibers which make possible the advancement apexward of the epithelial attachment, and which gives to the disease its name—periodontoclasia—results from chronic inflammation extending into the periodontal tissue among and between the periodontal fibers for considerable distances from the bottom of the pocket. (Fig. 20). This inflammatory process is characterized by round cell and plasma cell infiltration, and by accumulation of these inflammatory cells between the bundles of periodontal fibers. (Figs. 21, 22, 23, 24). As the process continues the involved fibers are broken down and finally resorbed.



Fig. 20: Section of typical active periodontoclasia lesion (slightly pulled apart). Note especially, location of calculus, Ca, in relation to inflamed gingival tissue. Note also how far round cell infiltration, I, where periodontal fibers are being destroyed, extends from bottom of pocket, BP. E-enamel space, Cu-ribbon of enamel cuticle, D-dentin, Ce-cementum, CEJ-cemento-enamel junction.

The important fact that foreign material (calculus and bacterial film) is always present on the tooth within the inflamed gingival crevice (the periodontoclasia lesion) is well shown in numerous illustrations to be found throughout the literature relative to this disease, or in some instances presented for other purposes. Most pictures show what is usually labelled calculus on the tooth within the pocket. The fact that the calculus and the

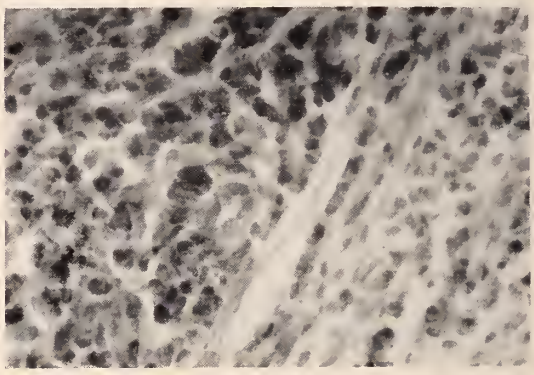


Fig. 21: Heavy round cell and plasma cell infiltration in periodontal tissue resulting in destruction and removal of periodontal fibers. Only a few fibers remain.

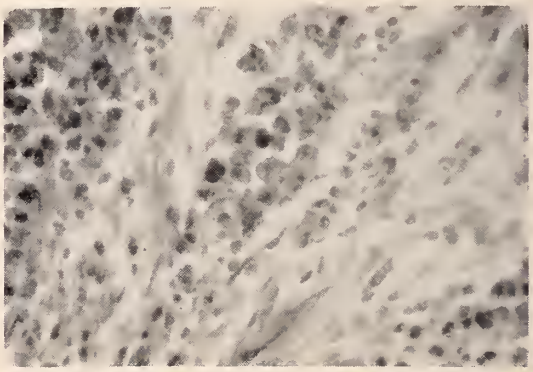


Fig. 22: Round cell and plasma cell infiltration among and between periodontal fibers. Destruction of fibers not quite as advanced as in Fig. 21. More fibers intact.

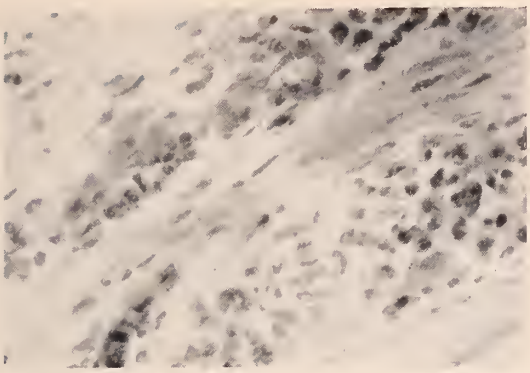


Fig. 23: Inflammatory cell infiltration less than in Fig. 22. Good periodontal fibers intact.

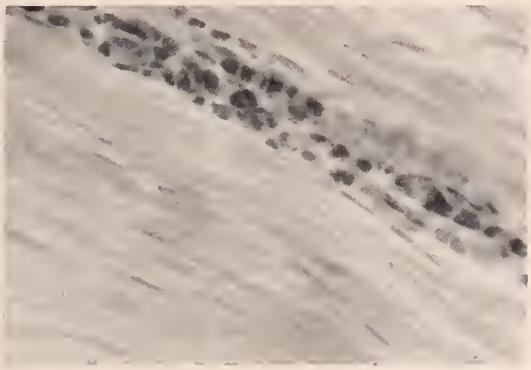


Fig. 24: Inflammatory cells accumulated in a streak between good intact fibers. Condition often found farthest from the bottom of pocket.

part of the tooth between the inner border of the calculus and the outer border of the epithelial atachment are covered by heavy bacterial film,[44, 48] is usually overlooked. Following are listed a few of such publications and the particular illustrations which show this important feature of the disease, upon which effective personal oral hygiene must be based: [51](Figs. 1 2, 3, 4), [52] (Fig. 6), [53] (Fig. 8) [54] (Figs. 20, 23, 29), [55](Figs. 2, 7, 8), [56](Figs. 1, 5, 6), [57](Figs. 3, 12, 14, 20, 25, 26, 27, 29, 30), [49](Figs. 17, 18, 20, 39), [58](Fig. 10), [59] (Figs. 24, 26, 31), [60] (Figs. 16 (2), 13 (3), 24 (7)), [16](Figs. 278, 287, 288, 289, 293, 305), [62](Figs. 3, 4), [63](Figs. 3, 5), [64](Fig. 190), [26](Figs. 138, 218, 222), [65](Figs. 59, 64), [18](Fig. 104), [67](Figs. 491, 713, 733, 734, 735, 738, 767B), [68](Figs. 261, 264, 268), [69](Fig. 15), [70](Figs. 6, 8).

The lesion, at first microscopic and later macroscopic, extends around the tooth, but is usually deeper and more active in the interproximal crevices which are deeper and where accumulations of foreign material are less subject to removal by functional friction or customary methods of oral hygiene. The tooth surrounded by concretion and bacterial material adhering to it within the gingival crevice (lesion) is, in effect, a foreign body, constantly subject to infection and reinfection with the many different kinds of bacteria in the mouth.

This foreign body effect was recognized and its importance emphasized more than seventy-five years ago by John W. Riggs.[71] More than sixty-five years ago J. N. Farrar[52] urged the necessity of removing this subgingival foreign material and laid special emphasis upon keeping the area clean. He said "the disease vanishes when the pockets are carefully and thoroughly cleaned, and *kept clean*." To this day, removal of this material from the tooth, which these pioneers advocated at that time, is still essential for successful treatment of the disease. Not only is it essential, but it is perfectly logical, that the local cause of the disease should be removed and its reformation prevented. Prevention of its reformation is accomplished by the method of personal oral hygiene herein presented.

(To be continued in March issue)

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COMPULSORY EXTENSION OF SOCIAL SECURITY COVERAGE TO PRIVATE PHYSICIANS

At present, physicians are exempt from the operation of the so-called Social Security law, which is the popular name for the Old Age and Survivors Insurance phase of the Federal Welfare program. In a recent message to Congress, President Eisenhower recommended the compulsory extension of social security to three and a half million self employed persons, including private physicians. Congress will soon act upon this legislation, and it behooves each member of organized medicine to consider thoroughly the implications of such laws and to be able to talk to his congressman on a factual basis in regard to their passage.

The House of Delegates of the American Medical Association, in 1949, and again, in 1953, expressed strong opposition to the extension of compulsory coverage of physicians under Title II of the Social Security Act. At the same time, it expressed approval and support of the Jenkins-Keogh Bills (HR 10 and HR 11) which are now before the Congress. These bills are designed to provide for the development of a voluntary pension program which is equitable, free from compulsion, and satisfies the retirement needs of physicians on a voluntary basis.

If social security were extended to physicians, it would levy a 3 per cent tax on the first $3600, and later, probably, the first $4800 of income. This would provide $85 a month after age 65, and an additional $45.50 for the wife after she reaches 65, while he is living, and $63.80 when she would become a widow. However, if a physician earned more than $900 a year after 65 he would forfeit his social security benefits until after age 75. From the physician's point of view such a bill would serve the improvident and would afford considerable financial advantage to those who enter it at an advanced age. Dr. Dickinson states that a self employed person at age 62, brought under Old Age Insurance in 1952, by paying as little as $121.50 in OASI taxes, could have a pension of $80 a month for himself, $40 a month for his wife and $60 a month for his widow after his death. On the other hand, an insurance company would want about $23,000 at age 65 for such a contract.

Against this type of legislation, are many facts which would make it an unjust tax on physicians as a whole. The most important reason against compulsory Social Security for physicians is the fact that it is another move in the direction of regimentation and the welfare state. The long-time result would be big pensions

and bigger government. The prohibition against earning more than $900 while on Social Security would make it inacceptable to most physicians. The majority of them do not retire, and if they did, they could not live on $85 a month. The fact that he is allowed to receive income from his investments is of no value in the argument, because if such income is going to be sustaining, there is no need for his enforced inclusion anyway.

The proposed payments under the anticipated change in the Social Security law would not bring a pension paid for in advance, but, on the contrary, would simply be a dole provided from the tax payments of younger participants and other taxpayers. It is calculated in the report of the Curtis Subcommittee on Social Security of the House Committee on Ways and Means that beneficiaries now on the OASI rolls have prepaid with their employers only about one twenty-fourth of the cost of the benefit they are receiving. Another portion of the money is coming from the payments of the younger taxpayers and from the general taxpaying public.

As physicians we are cautious and our experience makes us into conservatives. As such in recent years when there has been such an avalanche of social legislation designed to regiment the medical profession and establish state medicine, we have frequently been put in the attitude of opposing these unworthy projects. We have been criticized for being against everything, particularly, this form of so-called progress. In opposing the extension of compulsory inclusion in the Social Security Act we are able to endorse and support a constructive piece of legislation designed to do the same thing that the Social Security Act ostensibly would do, and do it much better as an expression of free enterprise. The Jenkins-Keogh Bills, which were mentioned above, and which have previously been discussed in these columns, would accomplish this. These Bills do not amend the Social Security Act. They do amend Section 165-A of the 1942 Federal Internal Revenue Code. These bills would allow tax deferment for individual retirement funds. They would benefit 11,000,000 self employed. They also would benefit 30,000,000 pensionless employed, whose employers have no pension plans. Thus, it is seen that two thirds of the 61,000,000 gainfully employed persons are pensionless. While these self employed and many of these pensionless employed lack the employee fringe benefits which characterize our era, the Jenkins-Keogh Bills would supply them. These pensions drawn from the individual retirement funds would range from 16 to 32 per cent of average annual earnings compared to the benefits from the tax exempt pension plans of the twenty largest employers in the United States, which range from 34.6 to 53.2 per cent of annual earnings.

Along with the American Medical Association, the American Dental Association, the American Farm Bureau Federation, and the American Bar Association, have approved these tax deferment individual retirement fund proposals. Organized medicine regards these bills as the answer to compulsory pensions. It recognizes that pressure for compulsory health insurance follows in the wake of compulsory pensions. The socialist bureaucrats have failed to establish socialized medicine by a frontal attack. They now seek to reach their objective by adding health benefits to the Social Security system, on the one hand, and federal subsidies to the voluntary health insurance on the other.

The problems that Medicine faces along these lines are clearly delineated in recent publications of the American Medical Association.[1,2] These plans will require consideration by physicians during the years

1. Blasingame, F. J. L., and Dickinson, Frank G.: A physician and an economist look at old-age and survivors insurance, J.A.M.A. 153:921, (November 7) 1953.

2. Dickinson, Frank G: Prepaid pensions for all-including physicians, J.A.M.A. 154:417, (Jan. 30) 1954.

ahead and all should familiarize themselves with the substance of these two discussions.

The Jenkins-Keogh Bills would be very helpful. The operation of compulsory Social Security would ultimately operate for medical regimentation. In substance, this tax will provide very little for the average physician, and is just another plan among many which converge to make the productive half of the population carry the other half until they both drop.

ORGANIZATION SECTION

The Executive Committee dedicates this section to the members of the Louisiana State Medical Society, feeling that a proper discussion of salient issues will contribute to the understanding and fortification of our Society.

An informed profession should be a wise one.

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MEETING OF STATE CHAIRMEN AMERICAN MEDICAL EDUCATION FOUNDATION

Following is report submitted by Dr. Edgar Hull, member of the Committee on American Medical Education Foundation

of the State Society, who attended a meeting of state chairmen held in Chicago, Sunday, January 24, 1954.

REPORT

Dr. Turner spoke about the purposes and aspirations of the AMEF. He spoke of the great increase in the cost of medical education in the past two decades, both to the school and to the student. He emphasized especially the importance of help to the students, who have to pay three times as much for their medical education as they did two decades ago. He mentioned the importance of the schools and the students being helped without their being forced to seek federal aid with its inevitable federal control. He stated that there were two sources from which such aid could be obtained: (1) from physicians, and (2) from the lay public. AMEF is dedicated to solicit funds from physicians, the National Fund for Medical Education to solicit funds from the lay public, especially from industry; and that the two funds were being pooled, divided among the schools, and given to them as unrestricted gifts.

It occurred to me while Dr. Turner was speaking that it might be advantageous if the schools were to use some of the funds which they receive from the Foundations in order to establish loan funds or scholarships for their students.

Dr. Turner and others emphasized the fact that the AMEF has no administrative costs, all of which are borne by the AMA, so that every dollar which a doctor contributes to AMEF goes to the medical schools.

Mr. Ade, Director of Fund-Raising for the National Fund for Medical Education, stated that the fund is now in the process of trying to sell industry on their stake in medical education, and trying to get industrialists to give to the central fund to help all medical schools rather than to contribute to individual medical schools. He said that part of their task has been to educate business men as regards the stake of industry in medical education, and to point out that medicine is one of the last bulwarks in resisting governmental control. Business men are being told that if industry does not contribute to the needs of the medical schools, government must and will take over. He pointed out, however, that industry will not support medical eduation unless the doctors themselves support it as well. He was pleased, however, that during the past year slightly more than half of the total amount distributed to medical schools came through direct and indirect contributions of physicians. He stated that the goal of the combined foundations is ten million dollars per year, two million of which is to be raised by AMEF and the rest by the National Fund.

Mrs. Gastineau spoke of the activities of the Woman's Auxiliary of the AMA and of the State Auxiliaries in helping the campaign of AMEF.

Mr. Pettis, Associate Director of the California Medical Association, spoke of the Audio-Digest Foundation, which is now a subsidiary of the California Medical Association. This foundation is preparing and selling tape recordings which digest medical literature for general practitioners and specialists, and which is also recording for distribution lectures and round-table discussions by leading authorities. Audio-Digest was originally started as a private corporation which was growing rapidly before the California Medical Association took it over. All profits of the Audio-Digest Foundation are to be given to AMEF, and it is believed that at its present rate of growth this should amount to nearly a million dollars a year within the next few years.

Mr. Pettis stated that exhibits explaining Audio-Digest are now available for State Medical meetings. It would be my recommendation that their exhibit be shown at the State Meeting this year.

Mr. Jones, Executive Secretary of AMEF, spoke of the increase in contributions by doctors in 1953 over 1952, but recalled the fact that the eventual goal of two million dollars per year has only been half realized. It seemed to me, however,

that actually the goal has been only one-fourth realized, since of the little more than a million dollars raised by the Foundation in 1953, a half million was a direct grant from the AMA.

Mr. Jones emphasized again the fact that grants to schools are entirely unrestricted, that the Foundation has no administrative costs; he also mentioned the fact that when doctors contribute to AMEF they may specify the schools to which they want their contributions to go. He mentioned that two states, Illinois and Utah, had increased their dues by $20.00 annually, the extra $20 to go to the AMEF, and stated that in Illinois, which has led all other states in contributions to AMEF, the increase in dues did not result in a decrease in individual contributions to the Foundation. As I understood it, both in Illinois and Utah physicians who believe that the increase of $20 will work a hardship upon them are excused from paying this extra amount in dues. He stated also that New York has a voluntary plan in operation whereby each doctor, at the time he is sent the statement for his dues, is requested to include an additional $10 to go to AMEF. He suggested an eventual goal of $25 contributions from each member of every State Society. He believes that the principal function of the Woman's Auxiliary as regards AMEF is to sell their husbands on the idea of contributing.

At the afternoon seminar a number of questions were asked and answered. The main points which seemed to me to be of importance were as follows:

1. How the funds are divided among the medical schools. At present there are two bases for such distribution of funds: (a) a uniform sum, which goes to all medical schools regardless of their size; (b) a pro rata sum based upon number of students in the school. It is planned in the future, as the size of the fund increases, to provide an additional type of grant based upon the special needs of certain schools. It was noted on sheets which give the amounts paid to each medical school that the amount to each is proportional to the number of students, and that two-year schools get half as much as the four-year schools.

2. Mr. Steinwell, from Maryland, who apparently is connected with Johns Hopkins University, stated that there had been conflict between the AMEF campaign and Hopkins' own annual campaign to raise funds from their alumni. He stated that they preferred for their alumni to contribute directly to Hopkins rather than to AMEF, and he felt certain other endowed schools would have the same opinion. There was a lot of discussion about this, and it was pointed out by Mr. Ade that the prime purpose of AMEF and the National Fund was to get persons to contribute to all medical schools, so that the small as well as the large ones, and those with large active alumni associations as well as those with smaller groups of alumni might be helped. No action in this regard was taken at this meeting, but Mr. Jones stated that they had conferences in mind to discuss this problem.

3. Near the close of the meeting Mr. Ade, of the National Fund, stated that he is anxious to set up local committees in various cities in order to establish machinery for the solicitation of men in business and industry for contributions to the National Fund. It is my recommendation that the State Society do whatever it can to increase the number of physicians who make contributions to AMEF, but I have no specific recommendation as to how this should be done. It is noted on the State list of contributions that in 1953 there were only 39 physicians in Louisiana who contributed, and that their total contribution was only a little over a thousand dollars. This places Louisiana near the bottom of the list, and I believe actually at the bottom in proportion to its population.

Edgar Hull, M. D., Member
Committee on American Medical Education Foundation

The above report by Dr. Hull should stimulate the members of our Society who

have aided this fund in the past to contribute more liberally. It should also be an incentive to the other members who have not given any financial support to this most worth-while undertaking, sponsored by these national groups, to contribute, thereby aiding our two medical schools in continuing to give our medical students the splendid medical training offered in the past.

As an alumnus of either school, you can earmark your contribution and designate to which school you desire your contribution sent.

This amount so earmarked for the school of your choice will, in no way, reduce the amount to be received by the respective schools from the grand total collected by these two national organizations. It does not matter whether you send your contribution direct to the American Medical Education Foundation or to the school of your choice, it will go to the school for which the gift is earmarked and intended. You will be given credit for your contribution, in either case, in their annual reports.

These funds, so earmarked will not be included in the General Fund, and your school will still receive, in addition, the proportional amount along with other schools from the total funds allotted for all medical schools.

Most assuredly we as members of our State Society, should be ashamed to let our state be at the bottom of the list as it is stated to be in Dr. Hull's report.

Let us all take a pledge to make a better showing for 1954.

MEDICAL NEWS SECTION

CALENDAR

PARISH AND DISTRICT MEDICAL SOCIETY MEETINGS

Society	Date	Place
East Baton Rouge	Second Tuesday of every month	Baton Rouge
Morehouse	Third Thursday of every month	Bastrop
Natchitoches	Second Tuesday of every month	
Orleans	Second Monday of every month	New Orleans
Ouachita	First Thursday of every month	Monroe
Rapides	First Monday of every month	Alexandria
Sabine	First Wednesday of every month	
Second District	Third Thursday of every month	
Shreveport	First Tuesday of every month	Shreveport
Vernon	First Thursday of every month	

EENT ANNUAL MEETING

The annual meeting of the Eye, Ear, Nose and Throat Hospital Alumni Association will be held in New Orleans at the Hospital April 5, 6, and 7, 1954. Samuel Fomon, M. D., of New York City will deliver the Clyde Lynch Memorial Lecture and participate in operative demonstrations. All Alumni and other interested E.E.N.T. men are invited to attend.

FIFTH DISTRICT MEDICAL SOCIETY

At a meeting of the Fifth District Medical Society, held with the Ouachita Parish Medical Society in Monroe on December 10, the following doctors were elected to serve as officers for 1954:

Dr. Henry E. Guerriero, Monroe—President.

Dr. W. J. Burchell Liles, Monroe—Secretary-Treasurer.

Dr. F. McC. Terrel, Lake Providence—Delegate.

Dr. Mortimer Raphael, Monroe—Alternate.

Dr. Jack G. Kerr and Dr. LeRoy J. Kleinsasser, both of Dallas, presented scientific papers on "Infectious Ano-rectal Disease" and "Treatment of Acute Vascular Disease", respectively, and Judge Vincent Mouser, of Columbia addressed the group after dinner was served to members and their wives.

THE SOUTHEASTERN SURGICAL CONGRESS

The Twenty-second Annual Assembly of the Southeastern Surgical Congress will be held in Birmingham March 8-11, 1954, with headquarters at the Dinkler-Tutwiler Hotel. Fifty-six outstanding speakers will participate in the scientific program and panel discussions will be held on each day of the meeting.

Additional information may be secured by communicating with the Secretary, Dr. B. T. Beasley, 701 Hurt Building, Atlanta 3, Georgia.

WARNING

Information has been received that a man by the name of Roland, purporting to represent the American Medical Association, has been contacting nursing homes in Texas and Louisiana and threatening them unless they purchase his books.

Dr. George F. Lull, Secretary Manager of the American Medical Association has advised that no one by this name is employed as a representative of the AMA and that the AMA does not have agents in the field selling books. Members of the State Society are therefore warned against making purchases from such a person.

CARDIOVASCULAR DISEASES IN WOMEN MAY NOT BE INFLUENCED BY OBESITY

The development of high blood pressure and coronary diseases in women may not be influenced by obesity as it is in men, a study of 1,000 persons by three New York heart specialists disclosed.

The reason for this possible difference between the sexes is not obvious, the doctors wrote in the December 26 Journal of the American Medical Association.

"It is apparent that hypertension is found more commonly in obese men than in those who are of average weight or who are underweight, but the exact relationship between hypertension and obesity remains obscure," the doctors pointed out. "There is no definite evidence that the obesity is causally related to hypertension. It may be that the factors resulting in hypertension also produce obesity, e.g., emotional influences, faulty metabolism or a hormone disturbance.

DRINKING AND IMPORTANT ACTIVITIES DON'T MIX

If you have something important to do, don't drink beforehand.

The greatest danger from the use of alcoholic beverages concerns the relationship of drinking to subsequent actions, a medical consultant wrote in the Journal of the American Medical Association, stating:

"For example, the after-dinner drinks may be perfectly harmless if no important activities are undertaken at such times, whereas the drink taken before driving a car, running machinery, or performing any task that demands accurate decisions or mental acuity might be dangerous. The drinker should observe the following rule. For every two drinks, he should wait three hours before undertaking important activities."

Contrary to popular opinion, the mixing of alcoholic drinks does not increase the intoxicating effects of alcohol, since these symptoms depend on the actual amount of alcohol consumed and other factors, he stated. However, this old wives' tale concerning the mixing of beverages may be of value, since promiscuous sampling is likely to lead to greater consumption of alcohol, just as a great variety of foods may lead to overeating, he said.

LIKE ATTRACTS LIKE

States with the highest number of doctors per capita have the largest number of young men and women who want to enter medical school, according to statistics compiled by the Association of American Medical Colleges and reported in the October issue of The Journal of MEDICAL EDUCATION. It is suggested that the common economic, educational and cultural factors which attract doctors also stimulate students to become doctors.

DIAGNOSING BONE TUMORS IN CHILDREN

There can be no denying the fact that malignant neoplasms of bone currently represent one of the most important causes of death in children.

This is a report made by Dr. John F. Holt, of the University of Michigan, Department of Roentgenology, in the current (November) issue of *Radiology*.

"For the year 1948," Dr. Holt points out, "malignant neoplasms caused more deaths in children from 5 to 14 years of age than any other disease."

When one considers that primary bone tumors, including those cases of leukemia with bone involvement, constitute approximately 25% of all malignant growth in this age group, and that they are almost invariably fatal, then their true importance becomes evident," Dr. Holt adds.

PRELIMINARY TESTS PROVE NEW ANTIEMETIC DRUG EFFECTIVE

Nausea and vomiting caused by a wide variety of clinical conditions and by use of numerous drugs have been suppressed or controlled through administration of a new drug, known only as compound 2601-A, it was reported in the October 3 Journal of the American Medical Association.

This new antiemetic drug, synthesized chlorinated phenothiazine, has been used on 70 patients "with gratifying results," even where other antiemetic drugs have failed, according to Drs. Gale G. Friend and James F. Cummins, Boston.

"Without doubt, compound 2601-A has a powerful selective effect against nausea and vomiting, and is effective whether given orally or intramuscularly," the doctors stated.

STERILITY OF SURGICAL LINEN HELPED BY 2 BACTERICIDALS

Impregnation of wet surgical linen with the bactericidal agents Roccal and hexachlorophene has proved an effective means of preventing transmission of bacteria to wounds during surgery, according to Dr. Harry D. Propst of the Guthrie Clinic and Robert Packer Hospital, Sayre, Pa.

Writing in the *American Journal of Surgery* (86:301, Sept. 1953), he describes laboratory and operating room studies demonstrating that bacteria pass through wet surgical cloth, thereby exposing the surgeon's hands, instruments and suture material to contamination. Linen became wet from the surgeon's or patient's perspiration; from irrigating solutions; and from sterile water used in cleansing instruments.

Testing the usefulness of Roccal, a quaternary ammonium compound supplied by Winthrop-Stearns Inc., Dr. Propst reports that 1500 cc. of 10 per cent Roccal were added to the last rinse during washing of surgical linen to give a 1:2500 dilution. Cost of Roccal for a complete day's laundry amounted to one dollar, he says.

Analysis of a piece of treated linen showed 0.44 mg Roccal per gram of linen, or 0.07 mg. per square inch. In vitro studies demonstrated that Roccal-treated cloth inhibited bacterial migration even when wet. The bacterial counts of both wet and dry materials decreased, with the percentage of culture showing no bacterial growth being 85 per cent when Roccal was used, and 18 and 60 per cent, respectively, for untreated wet and dry linens.

No cases of allergy due to skin sensitivity were reported by the hospital nursing staff following application of Roccal. Other properties of the compound are: activity from a pH of 3.0 ranging up to the alkaline level, low toxicity and stability to boiling and autoclaving. Tests showed, Dr. Propst observes, that hexachlorophene was also capable of inhibiting transmission of bacteria through wet linen.

He emphasizes that although the problem has been long neglected, the study demonstrates that incorporating either bactericidal agent into the final neutral rinse in laundering surgical linen will "decrease the possibilities of contamination from this source."

—o—

WOMAN'S AUXILIARY TO THE LOUISIANA STATE MEDICAL SOCIETY

Mrs. George Feldner of New Orleans has been elected president of the Woman's Auxiliary to the Southern Medical Association. This is the second time that a New Orleans woman has received this honor, Mrs. Wiley R. Buffington having been the first to hold this high position. Mrs. Feldner is noted for her outstanding service in medical circles. She began her activities in 1929 only a few months after her marriage to Dr. Feldner. At that time she was appointed to the Orleans Parish Medical Society Auxiliary Board. From there she went on holding many chairmanships until the war years.

In 1941, when Dr. Feldner went into the service Mrs. Feldner went with him to the many camps at which he was stationed; and there she was active in Red Cross and Civil Defense activities. After their return to New Orleans she held several offices in the Woman's Auxiliary to the Louisiana Academy of General Practice and was elected president of that organization in 1950.

In 1952 she was elected president of the Touro Auxiliary. Mrs. Feldner is a prolific writer having written various short stories that have been published and she will well be remembered for her script on the "Louisiana Purchase" which was the basis for the most successful pageant that Orleans Parish Auxiliary presented last spring. Her current works include a skit which was presented at the December meeting of the Orleans Parish Auxiliary based on the "Night Before Christmas". Her talents include designing and she has designed the presidents' and past-presidents' pins for Southern, State, and General Practice Auxiliaries. Auxiliaries from all over the state proudly hail Mrs. George Feldner.

ORLEANS PARISH

Woman's Auxiliary to Orleans Parish Medical Society entertained at a Christmas Party recently at the Orleans Club. A playlet was presented based on the "Night Before Christmas". Drs. Daniel J. Murphy, Branch Aymond, and Edwin Guidry were in the cast. Others participating were Mmes. Branch Aymond, Lloyd Kuhn, J. Theodore Brierre, and children of the auxiliary members, Mary Carroll Guidry, Linda Golden, Adrienne Wild, Michael Murphy, Catherine Murphy, Chris Rougelot, Beverly Danton, Mary Gaylord Sanders and Antha Ann Sanders.

IBERIA PARISH

On November 5, the Woman's Auxiliary to Iberia Parish Medical society presented a style show. Proceeds for the show went to the auxiliary's "Loan Closet" project. The Loan Closet provides hospital supplies for the sick in homes, such as hospital beds, chairs, crutches, and similar articles. These are loaned to the Iberia parish families without charge, whether the person is needy or not. It was explained

that in many cases hospitalization at home for several weeks requires special equipment that might be used only once in a lifetime. The style show which was a great success and which will allow the auxiliary to buy much new equipment was under the chairmanship of Mrs. Edwin Landry. Other members of the committee were Mmes. T. P. Sparks, I. W. Gajan, Jr., Leon Slipakoff, Henry Dautrieve, K. S. Motty, Jr., and O. P. Brown

Another activity of the Iberia Auxiliary is their future nurses clubs which have been sponsored in the six high schools in the city. Radio programs featuring members of the auxiliary speaking on the various projects and aims of the auxiliary are held periodically.

THIRD DISTRICT

Woman's Auxiliary to the Third District Medical Society entertained at a Christmas Coffee which was held at the Windson Room of Metairie Country Club. Fifty members and guests were present to meet Mr. Robert Tallant and hear his latest book "Love and Mrs. Candy" reviewed by Mrs. Robert Crager. Hostesses for the event were Mmes. Shelley Gaines, John Tanner, O. L. Pollingue and Allan Goldman.

LAFAYETTE PARISH

The Lafayette Parish Medical Auxiliary held its Christmas party in the home of Mrs. J. Boring Montgomery as the only social of the year. Members brought contributions of gifts to be distributed by Mrs. Montgomery to needy children of Lafayette. This is a project which the members have undertaken each year. Mrs. K. J. Burdin presided at the coffee table.

BOOK REVIEWS

The Book of Health; by Randolph Lee Clark, Jr., and Russell W. Cumley, Editors, Houston, Texas, New York, Elsevier Press, 1953. Pp. 836.

In the last century a family medical book which purportedly explained to the housewife "all there was to know" about health and medicine and surgery and particularly obstetrics; and the steps to be taken in an emergency, or in the birth of a baby unattended by a doctor, was sold throughout the length and breadth of the United States to people in the cities and towns and on isolated farms and plantations. Many of the mothers used information obtained from these digests and raised their families sometimes in the absence of doctors. This necessity no longer exists, but a ready source for authentic knowledge about health and medicine and the human body has not been available for the millions of well educated, highly intelligent Americans, in book form since the early part of this century,—until *The Book of Health* was recently published.

This book accomplishes in an easily understandable way a description of the human body and its workings; the various diseases which may affect it, and various measures which are used to correct the deviations from normal health. Cooperative efforts of some 242 top flight physicians, dentists, and biologic scientists in carefully reviewing the chapters have eliminated errors and absurd or unauthenticated fancies. The book is factual and accurate and it is most interesting. Intended for intelligent laymen it is nevertheless an excellent book for doctors. Perhaps the most valuable part of it for the physician is a section on medical history which is well done and is profusely illustrated by historically pertinent pictures and portraits.

The book can be readily advised as a source of reference and study for both the profession and the educated layman.

HOWARD MAHORNER, M. D.

Basic Principles of Clinical Electrocardiography; by Hans H. Hecht, Springfield, Illinois, Charles C. Thomas, 1950. Pp. 88. Price $2.00.

One of the many, many books devoted to this subject, it is well presented and rather easily understood. Its merit, as well as its disadvantage, is its brevity.

I. L. ROBBINS, M. D.

Heart and Circulation: Diagnosis and Treatment; by Meyer Sclar, M. D., F. A. C. C., assisted by Jacob Melnick, M. D., New York, Froben Press, 1953. Pp. 357, illus. Price $7.50.

The stated aim of Dr. Sclar, Brooklyn cardiologist, has been to present the basic concepts of diagnosis and treatment in the field of cardiology and peripheral vascular disease, in order to simplify the approach of the general practitioner and medical student to cardiac patients. The short text treats important aspects of the field very briefly and in a very elementary fashion, relying in part on a telegraphic method of presentation. In making recommendations on controversial or unsettled subjects, the author has relied on his own experience, so that references to the literature are omitted.

It is doubtful that this book will find wide usefulness and it is not recommended.

W. D. LOVE, M. D.

Shock Syndrome; Edited by Roy Waldo Miner, Annals of the New York Academy of Sciences. Vol. 55, Art. 3. Pp. 345-542. Price $3.75.

This is an excellent summary of the recent work and thinking on shock and related problems as presented by the investigators who have been most active in the field. The various papers were given in a conference on shock syndrome held by the Section of Biology of The New York Academy of Sciences on November 30 and December 1, 1951. The discussions which followed the presentation of the papers are also given.

The monograph is divided into 3 parts. Part 1 deals with various aspects on the shock syndrome and includes discussions of the role of coronary circulation, metabolic changes, adrenal cortex, electrolytes, etc. Dr. Jacob Fine and his colleagues present their recent findings emphasizing the importance of bacteria in the development of shock and General Sam F. Seeley has a short but instructive chapter on intra-arterial transfusion. Dr. E. B. Reeve's paper on "The Quantities of Blood Lost by Grossly Injured Men Within a Few Hours of Wounding" is a particularly good analysis of blood volume and hematocrit estimations.

Part 2 is devoted to plasma and volume expanders and includes experimental and clinical data on the various substances that are being investigated, such as Dextran, P. V. P., and globin. While considerable new data is available since the presentation of these papers, they serve to indicate the nature and directions of the experimentation that is being conducted as well as some of the inherent difficulties.

Part 3 is an interesting paper by Huber on the cold sterilization by electron beam as a possible tool for the inactivation of the virus of homologous serum jaundice in plasma. The problem of sterilizing plasma has been a particularly troublesome one and Dr. Huber's suggestions and data are very promising.

Much has been written and will continue to be written on this ever-present problem. At the present time, many scientific disciplines are being called upon to collaborate in the search for solutions of the various aspects of the problems. To present any coherent or reasonably complete picture is difficult, but this monograph does serve to indicate the progress that is being made and the opinions and points of view that are developing. As such, it is a valuable contribution.

H. S. Mayerson, Ph. D.

Physiology of Exercise; by Laurence E. Morehouse, Ph. D. and Augustus T. Miller, Jr., Ph. D., M. D. 2d ed. St. Louis, the C. V. Mosby Company, 1953. Pp. 355, illus. Price $4.75

This text has been revised to include the new information on the physiology of muscular exercise which has been made known since World War II. It, also, has combined several chapters of the first edition, shifted the order in which some of the subject matter had been presented previously and added a moderate amount of new material. A significant improvement is a greater attention to the fact that the students for which the text is intended have only an elementary knowledge of basic chemistry and physics.

In general, the second edition is an improvement over the first, but it is questionable that all the changes made are improvements.

John K. Hampton, Jr.

Atlas of Surgical Exposure of the Extremities; by Sam W. Banks & Harold Laughman, Philadelphia & London, W. B. Saunders Company, 1953. Pp. 391, illus. Price $15.00.

This Atlas represents the culmination of many years of careful preparation and fulfills a long felt need for an authoritative, comprehensive description of surgical exposure of the extremities. It is somewhat unique in its format and layout in that various operative exposures are discussed by regions and each step in the entire exposure is beautifully illustrated. The exposures, or indications for each exposure, are discussed and a concise description of the procedure included on pages opposite the illustration.

The use of proper names to designate various incisions has been purposely omitted.

There are few, if any surgeons, who will not benefit from this beautifully constructed and edited book. It is obviously a required reference for any one training in orthopedics or general surgery, and will serve as an authoritative reference for both the experienced surgeon and the occasional operator in operative procedures on the extremities. Both the authors and the publisher are to be congratulated on this exceptional, excellent work.

Jack Wickstrom, M. D.

Gifford's Textbook of Ophthalmology; by Francis Heed Adler, M. D. 5th ed. Philadelphia, Pa., W. B. Saunders Company, 1953, pp. 488. Price $7.50.

Five editions and fifteen years from the date of first publication, Adler's Gifford has become the handbook of ophthalmology for general physicians and a standard text for undergraduate students. Its scope is tuned to meet the interests and needs of physicians whose dealings with ophthalmic problems are of a general nature. Lucid descriptions of ocular pathology and the ocular manifestations of systemic disease encountered in daily practice are briefly presented. Physiopathology, which the author is so well

qualified to discuss, subtly flavors clinical descriptions, and clarifies the rationale of many therapeutic measures. Equivocal theories and dogmatisms give way to concepts having general acceptance. The sections dealing with the retina, and ocular manifestations of systemic disease have been greatly enlarged to include particularly pertinent material on hypertension, sclerotic vascular disease, and diabetes. The general physician will find this especially useful in correlating eye ground findings with data representing the status of the vascular tree elsewhere in the body.

Newer medicinal agents, such as cortisone, are added to the therapeutic armamentarium. Although treatment of specific disease is dealt with in the sections devoted to that part of the eye involved, the final chapter provides a list of therapeutic agents most commonly used in ophthalmology. The method of preparation, and the indications for use of these agents are listed.

Where a hundred words may fail, the excellent photographs with which the volume is profusely illustrated leave no doubt in the viewer's mind as to the appearance of clinical conditions demonstrated. The illustrations are, for the most part, from the author's clinical collection. A number of photographs, paintings, and charts depicting special subjects were obtained from authorities on those subjects, or other publications. The figures and colored plates numbered three hundred and seven.

Except for very general outlines of minor surgical procedures, descriptions of ophthalmic surgical techniques have been replaced by discussion of clinical indications for surgery. In keeping with the plan to direct the contents of this book on a need-to-know basis to general physicians, details of major surgical procedures have been omitted. Erudition has given way to practicality. This is further demonstrated by the absence of all documentation except illustration acnowledgements.

This little book makes available in concise form a large amount of practical knowledge to an important segment of the profession. Every medical library, regardless of the branch of medicine around which it is built, should contain a copy.

GUSTAV C. BAHN, M. D.

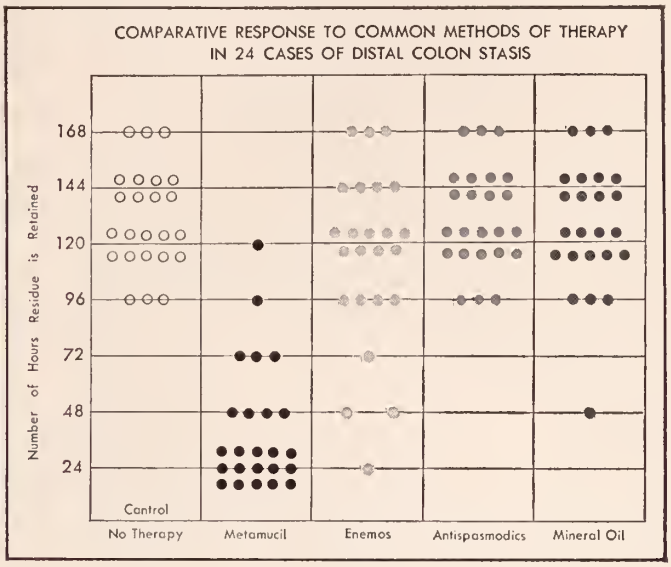
PUBLICATIONS RECEIVED

Drapkin Books, Linden, N. J.: Salt and the Heart, by Edward T. Yorke, M.D.

Charles C. Thomas, Publisher, Springfield, Ill.: Resuscitation of the Newborn, by Joseph D. Russ, M.D.; Coal Tar and Cutaneous Carcinogenesis in Industry, by Frank C. Combes, M.D.; Pelvic Relaxations and Herniations, by James M. Wilson, M.D.; Retinal Circulation in Man and Animals, by I. C. Michaelson, Ph.D.



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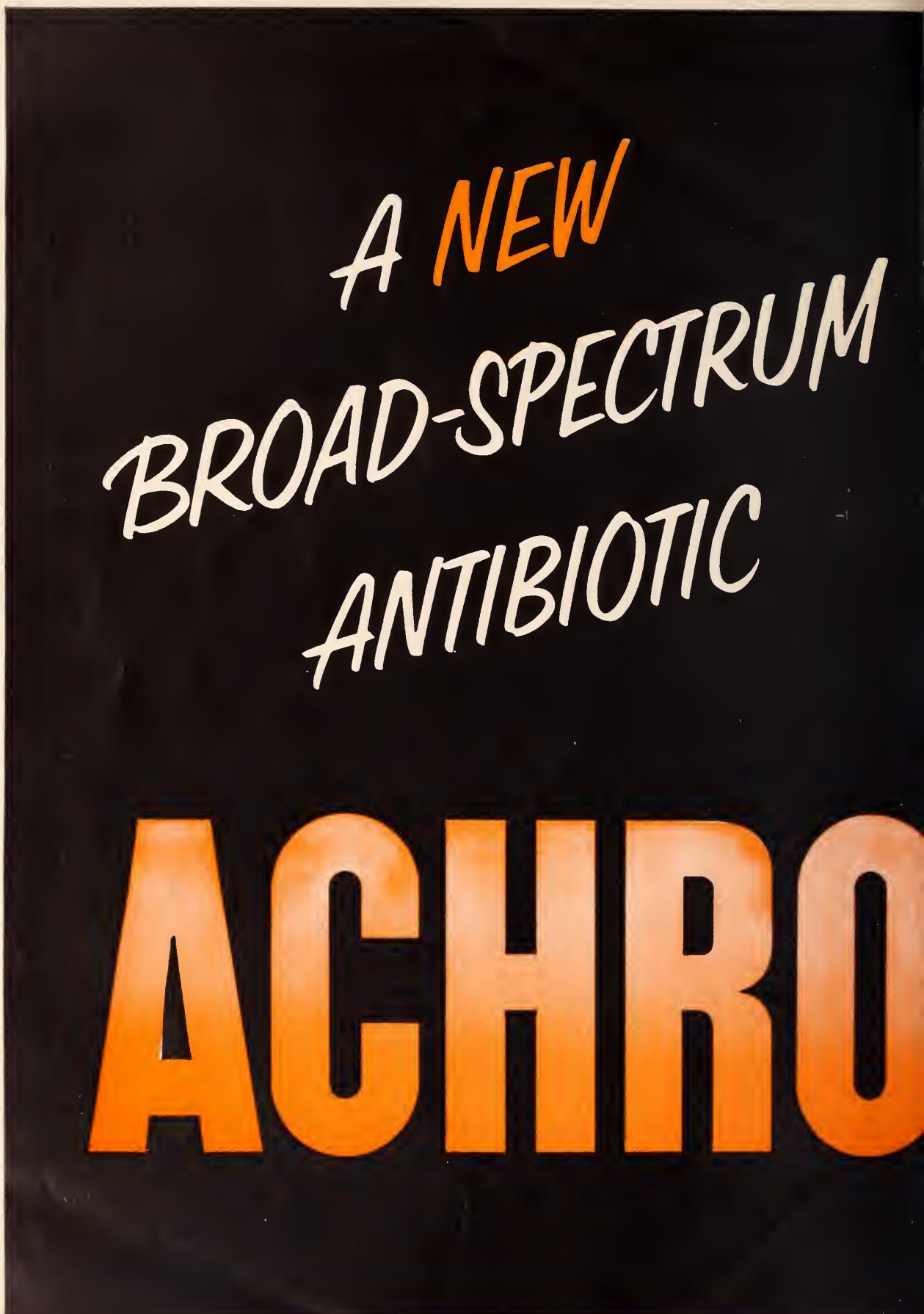
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*Barowsky, H.: A Roentgenographic Evaluation of the Common Measures Employed in the Treatment of Colonic Stasis. Rev. Gastroenterol. *19*:154 (Feb.) 1952.


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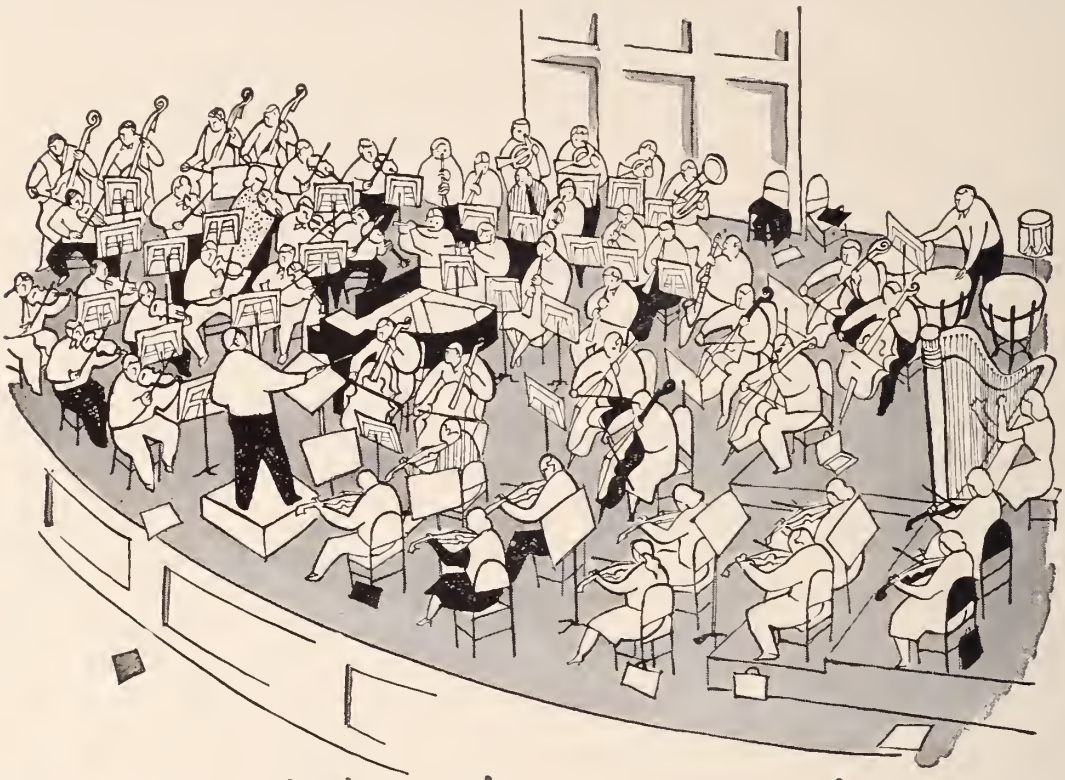
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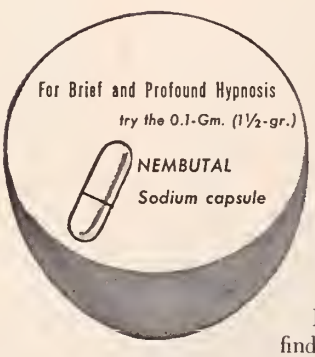
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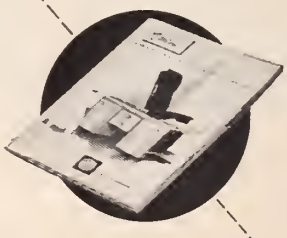
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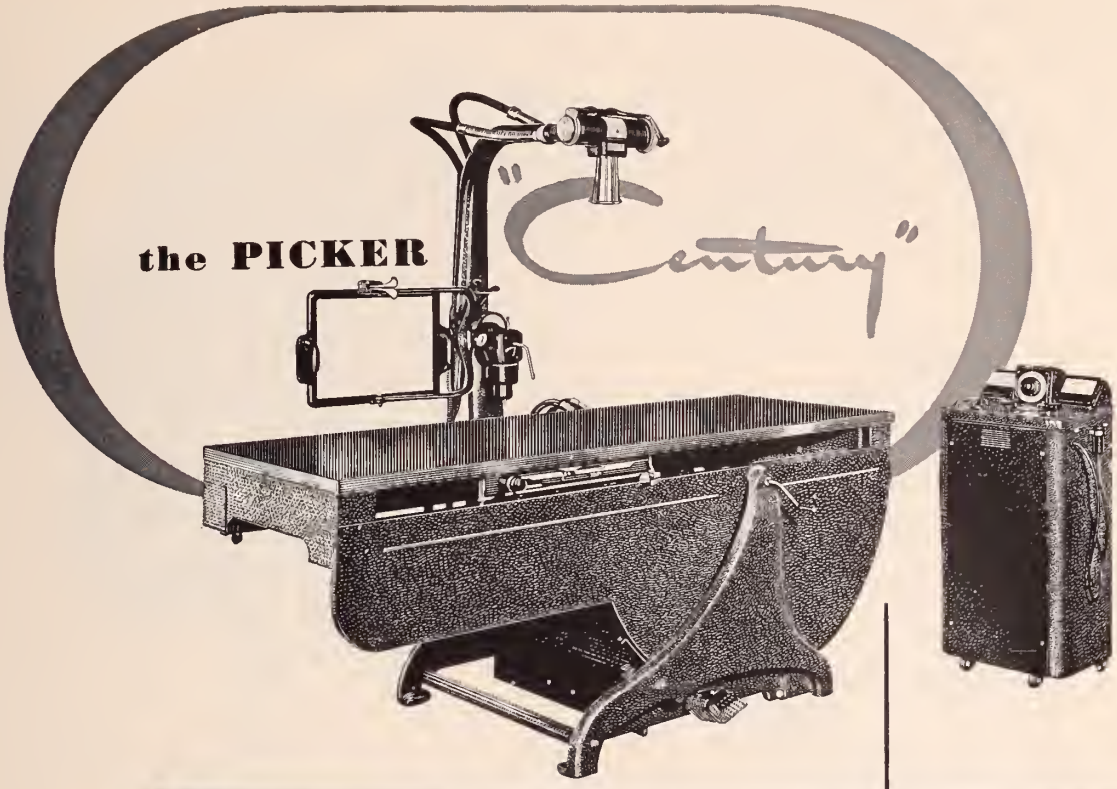


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ANNUAL MEETING—NEW ORLEANS—MAY 20-22



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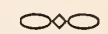
A committee of experts asked by the Public Health Service to evaluate data collected to study the effectiveness of gamma globulin as used to prevent or alleviate poliomyelitis, has reported that beneficial effects were not demonstrated either in the inoculation of family associates of polio cases or in the mass inoculation of children in epidemic areas.

Observation of communities in which mass inoculation of children was carried out did not provide enough information to permit the committee to conclude whether or not gamma globulin had an effect in preventing or alleviating the disease.

Among the cities where gamma globulin was administered on a mass basis to all children, the committee's report said that in most of them the inoculations were given after the peak of the epidemic had been passed so there was little chance to demonstrate an effect of gamma globulin in modifying the epidemic.

The committee found that the "family contact" use of gamma globulin, where members of the household of a polio case were inoculated as soon as the illness was recognized, did not measurably reduce the number of subsequent paralytic cases in these households.

Moreover, the committee said, their study of the family contact use indicated that when gamma globulin was administered to exposed persons before they came down with paralytic polio there was no measureable effect on the severity of the ensuing paralysis.



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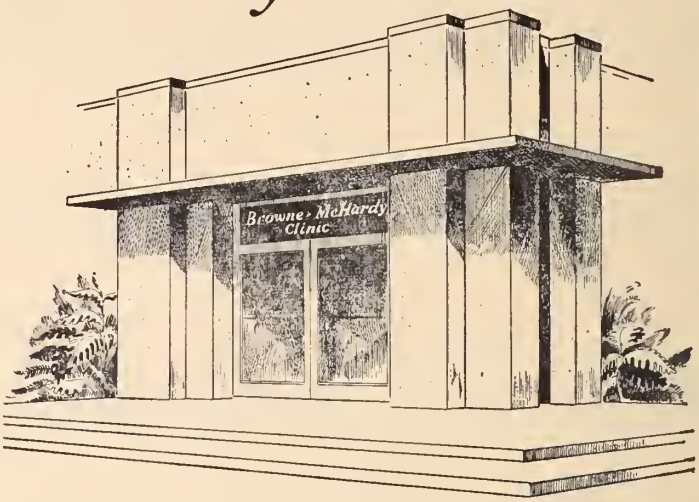
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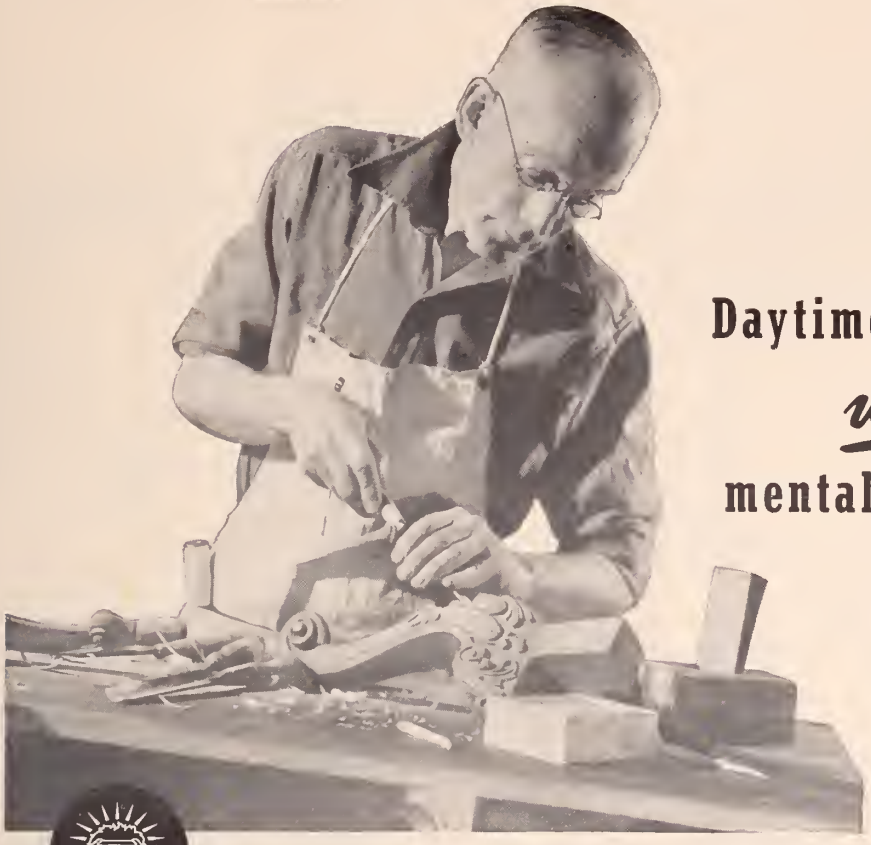
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1. Kauntze, R., and Trounce, J.: Treatment of Arterial Hypertension with Veriloid (Veratrum Viride), Lancet *2*:1002 (Dec. 1) 1951.
2. Wilkins, R.W.: Combination of Drugs in the Treatment of Essential Hypertension, Mississippi Doctor *30*:359 (Apr.) 1953.

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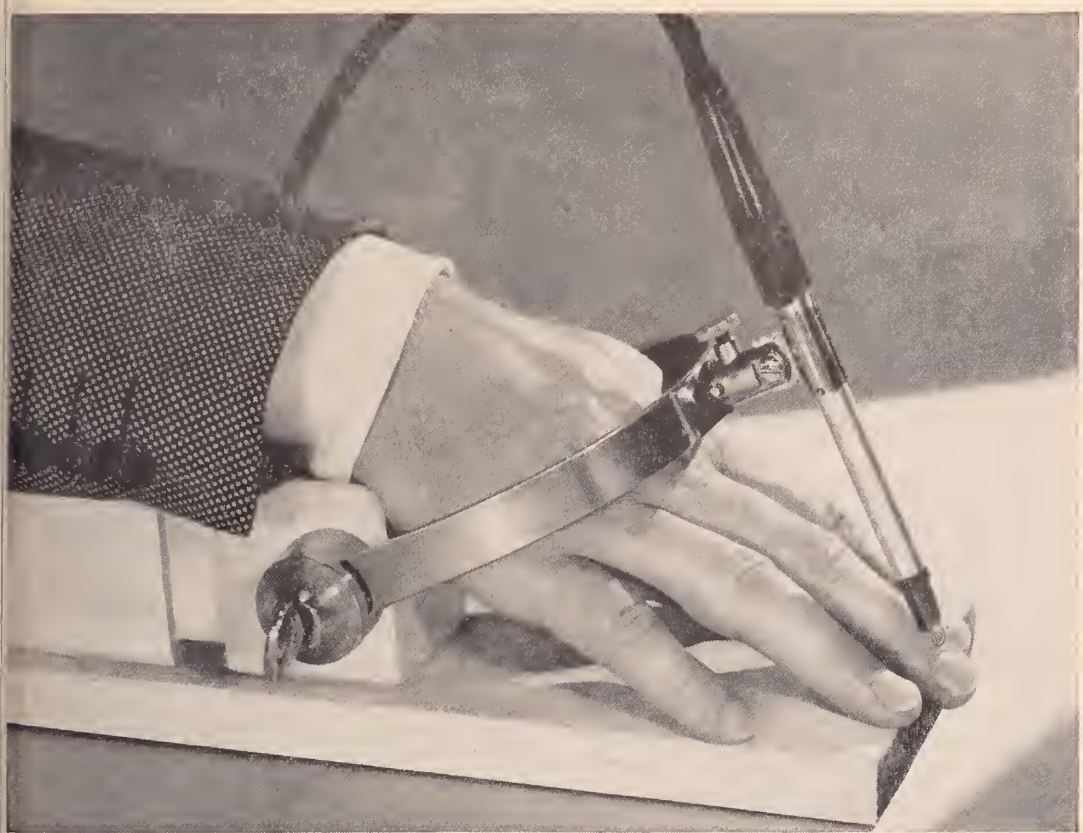
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It would seem scarcely necessary in this day of mechanization in the factory, on the farm, in the home, to emphasize the tremendous increase in trauma that has come as a corollary to our technological advance. The profession has just awakened to the significance of trauma, to the fact that the surgeon every day is confronted with the problem of injury. All injuries are surgical emergencies, not all of them serious, to be sure, but many present problems of care that would tax the skill of the most proficient. We have also awakened to the fact that by and large training in our medical schools and in our hospitals is usually deficient in just the type of case which the young doctor will be called upon to treat. The need for basic training in the treatment of wounds is not confined to those practicing any particular field of surgery, but exists throughout all of surgery. Injury is universal, and every surgeon should know the general principles of the care of wounds, and should be capable of rendering care commensurate with his training and with available facilities. Care of the injured starts with first-aid, about which physicians in general are not too well informed, and continues through the admission of patients to emergency room or hospital, the handling and diagnosis of the severity of the injury, and the various necessary examinations culminating in decision as to the extent of treatment. At this point, the soundness of the surgeon's judgement may determine the life or death of the patient, the rapid restoration of a limb to function or long months of invalidism. It is here that the surgeon must decide not only what care should be rendered, but also whether he is in a position to carry out that care. Several injuries may be present and priority of care must be established. Even in the case of a single injury, it is sometimes necessary to stage the treatment, accomplishing the most important steps first, and leaving other steps until later, to be carried out under more favorable conditions.

These same observations apply to all wounds, including open wounds of the hand. They, too, are on the increase, and in some industries and occupations comprise 50 per cent or more of all wounds. They, too, may vary from trivial injuries to extensive ones whose repair presents extreme difficulties. While few of them ever threaten life, all of them threaten the function of the hand. Care in the case of simple wounds calls for no special skill. However, in the case of complicated injuries the greatest of skill and judgement are often required to salvage even a modicum of function.

I should like to discuss certain features of the care of open wounds of the hand which seem to me to be important. Many significant details, I am sure, will be omitted, but I shall try to cover the major

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features and to indicate the important steps in care, to emphasize the priorities of care.

Little need be said concerning first-aid except that it consists only in the application of a compression dressing and a splint, and to stress the fact that a tourniquet is very seldom required. The compression dressing almost always will take care of bleeding; a tourniquet as usually applied simply blocks venous return and promotes hemorrhage.

The diagnosis of the extent of the injury is made by inspection, supplemented of course by x-rays where indicated. The wound is never probed or the borders retracted to discover divided nerves and tendons. The division of these structures is discovered by examination for motion and sensation. A general physical examination and blood and urine tests are carried out on every patient who is to get a general anesthetic and the surgeon makes sure the patient's stomach is empty, by lavage if necessary.

Operative care of the wound is done under operating room conditions even for apparently trivial wounds. The severe injuries are, of course, cared for in the operating room, usually under a general anesthetic.

Operations on the hand are carried out in a bloodless field secured by means of a blood pressure cuff. The hand is elevated for a few minutes, and the cuff is then rapidly inflated to 280 to 300 mm. Hg. This is maintained until the surgeon has completed the cleansing and wound excision, and is then released. After a few minutes of release, the wound is inspected, bleeders caught and ligated, and the cuff is again inflated and the operation completed. The cuff is finally released only after the compression dressing is applied.

The wound is prepared for operation simply by washing carefully with warm soap and water for from ten to twenty minutes, and is then draped for excision.

The excision of devitalized tissues is one of the most important steps in its care, and must be accomplished in all wounds. It has top priority in the treatment. It is the surgeon's aim in carrying out this excision to remove all tissue so severely damaged that it cannot survive. The decision is often not easy to make since appearances may be deceptive and removal, especially of skin, may produce difficult problems of closure. There must be no needless sacrifice of tissues, nor should hopeless tissue be left behind. If we know the severity of the injury, we have some clue as to the extent to which the tissues have been devitalized. For example, a skin flap crushed under a heavy weight is probably destined to necrosis, whereas extensive tears may disrupt, but not necessarily kill tissues. If we watch the return of blood flow into the hand after release of the blood pressure cuff, we can often detect, in the reactive hyperemia which follows, vascularization in areas which previously seemed without blood supply.

A common temptation is to replace large flaps of skin which have been avulsed from the dorsum of the hand or palm, or to slip the skin back over the fingers following degloving injuries. Occasionally such flaps will survive, but the keenest of judgement is required to know this, and suitable aftercare of these flaps is necessary. The degloved skin practically never survives and serious wound disturbances follow its replacement.

Great conservatism should guide the surgeon in the amputation of digits. They are often difficult to repair, and they often seem hopeless from the standpoint of function. However, we are frequently surprised at the amount of use a patient can secure from what seemed at first to be a useless finger. Very occasionally, when only one digit is involved, amputation may seem to be the wiser course, but even here it is often better to delay removal even if amputation is eventually required. The only absolute indication for amputation is an avascular digit.

The greatest of conservatism is practiced when it comes to excision of nerve, bone, and tendon. Crushed nerves will

often survive. Bone attached to bits of surrounding soft tissue is usually useful in later reduction and molding of fractures. Tendon is not sacrificed unless its inserting digit is gone.

While the process of excision is going on, the surgeon should permit his atraumatic conscience to rule. Surgical trauma leads to tissue necrosis just as surely as does accidental trauma. Gentleness in handling tissues is a lesson that should be learned early in surgery, and should become an unconscious habit just as is the observance of asepsis.

The extent of repair of the damage, that is, the reconstruction of the hand to restore a functioning member, is guided by several considerations. In the first place, the surgeon should not feel that extensive reparative procedures should be carried out unless conditions are satisfactory. Primary healing is essential at all stages of repair, and, hence, the limits of surgical procedures are determined by the amount of repair the tissues will stand and still heal kindly. It is necessary to secure primary closure of the wound and occasionally primary closure precludes extensive reconstructive surgery.

The repair of divided tendons may present a difficult problem, since exposure of the tendon stumps usually demands accessory incisions into uninvolved tissues. Unless the wound is seen fairly early, and unless conditions are suitable, primary tendon repair is best omitted. Repair of tendons over the site of an open fracture is seldom feasible, although it is occasionally permissible to suture the extensors of the fingers over open fractures. There should be flaps of skin and subcutaneous fat to cover the site of tendon repair. There is a great deal of discussion today as to the indications for primary suture of the flexor tendons within the digital sheaths. It is my feeling that if the patient is seen within two hours or so, if the wound is clean and, if it has not been tampered with, primary repair is permissible and offers good chance of success. Of course, only the profundus tendon is repaired and the sublimis stumps are removed. Where division involves only the profundus tendon distal to the sublimis insertion, primary suture is indicated without, of course, excising the sublimis, and in these cases the outlook is favorable.

Repair of tendons in the palm and wrist and over the dorsal surface of hand and fingers can usually be undertaken safely up to from four to six hours after injury. Some have felt that the antibiotics have increased these time limits, and the results reported by Flynn seem to substantiate this contention. However, it seems to me that one cannot be certain that penicillin will protect against all possible wound contaminants. Just as important, too, is the fact that secondary repair is possible in three to five weeks if the wound has healed satisfactorily.

Divided nerves should be repaired in all but frankly infected wounds. These should be the first structures sought for when the wound is examined at operation, and should be carefully identified so as to avoid damage during further dissection. It is here that a knowledge of anatomy is important, since it is not just the large trunks that must be isolated and repaired, but the smaller rami as well. The digital nerves, being purely sensory, regenerate rapidly after proper suture. Likewise, the motor rami of the median and ulnar, being pure motor nerves, regenerate most gratifyingly when sutured.

Most fractures are reducible by molding the hand into the position of function over some properly shaped splint. This method is especially valuable in case of the extensive crushing injuries in which skin replacement is necessary and in which a large compression dressing is indicated. It is not necessary, of course, to immobilize the whole hand if only one finger is fractured, but here, too, the finger should be placed in the functional position for reduction and maintenance of reduction. One always takes this opportunity to add further condemnation of the banjo splint which should *never* be used.

All open wounds of the hand should be

closed at the initial operation. If possible, this closure should be accomplished by suture, and it is at this time that the surgeon will be happy that he has saved all viable skin tags and flaps. It is often possible to dovetail irregular flaps and secure satisfactory if not beautiful closure with hand skin. If sufficient skin is not available for closure by suture, there are several alternative methods to which the surgeon has recourse. Split grafts of various sizes can be removed from the forearm, if only a small patch is required, from the thigh if larger sheets of skin are needed.

Not infrequently bones and joints are left exposed and tendons lie in the open field. It is not possible to cover these structures with free grafts. In such instances, a sliding or rotation flap is often of great value, and, with experience, the surgeon can frequently shift tissues from one side or the other to cover these sensitive structures, covering the donor area bed with split grafts. If such flaps connot be properly swung to cover the exposed bone ends or other structures, the pedicled or pocket flap is necessary. A flap with a broad pedicle can be raised from the abdominal wall and the hand inserted beneath it. It is somewhat awkward to resort to a flap if there are fractures to be held in reduction or if tendons have been repaired. Nevertheless, the surgeon should not hesitate to resort to a pedicle flap in the rare occasion where it is needed, since it may be the only means of saving a hand or digits.

The compression dressing which is applied at the end of the operation serves manifold purposes. It is applied before the blood pressure cuff is finally released so as to discourage or at least minimize the capillary oozing which may occur. The surgeon must not depend upon compression for actual bleeding from sizable vessels—these should be taken care of during operation by ligation of vessels as they are encountered. The compression tends to restore pressure relationships in the tissues, to support and promote venous return, to obliterate dead spaces and minimize, if not prevent edema.

The compression dressing is applied carefully, using large amounts of fluffed gauze or other resilient material; it is firm and even, not tight and constrictive. Special attention should be given to placing gauze between the digits and between the thumb and the side of the hand, as well as to tucking gauze into creases or skin folds, since maceration may occur and lead to infection. The woven elastic bandage is a convenient aid here, but the essential features of the compression dressing are large amounts of resilient dressing material and firm even compression.

Concurrent with the compression dressing is the application of a splint. Wherever possible, the hand is splinted in the position of function, or if only a couple of fingers need be put at rest, they are splinted in the position of function. This is the grasping position, and the value of placing the hand in this position can scarcely be overestimated.

The exact limits of splinting cannot always be accurately defined for each tissue or every case. Too long periods favor stiffness and delay functional recovery. Too short periods prolong healing by disrupting areas of healing and promoting scar. Splinting is kept up until the tissues have healed solidly enough to take over their proper function. This may mean eight to ten days for skin wounds, three to four weeks for nerves and tendons. Another principle is that as far as possible only those tissues which require splinting be kept at rest. Joints whose motion does not affect the injured part should be moved at the earliest possible moment and kept moving.

If tendons have been repaired, they are splinted in relaxation; flexor tendons in flexion; extensor tendons in extension. This relaxation is maintained for a period of three weeks (slightly longer for the extensor tendons), following which use of the involved fingers is permitted, although a wrist splint is worn for another week

to prevent over-extension or over-flexion.

Following nerve repair, the ends are kept relaxed for some three to four weeks to permit firm union. If motor nerves are involved, the muscles supplied by the nerves are maintained in relaxed position to prevent overstretching by unopposed antagonists.

Ordinary soft tissue injuries require from eight to ten days of rest, while bones (except the carpals) are usually firm in three to four weeks.

The after-care of the hand is of great importance, and I do not mean just the immediate after-care, but the observance and guidance of the patient until he is ready to return to work. Healing of the wound requires appropriate rest, and the limits of usual splinting have been alluded to previously. Inspection of the wound on the fourth or fifth day, without disturbing position, is occasionally indicated if the patient perspires a great deal, or if tiny rubber strip drains have been introduced into the wound and require removal. Sutures are usually out on the eighth to tenth day, and by this time simple soft tissue injuries require no further splinting, and use is permitted. During the third or fourth week, patients with tendon repairs start motion. Simple home therapy is carried out, warm, soapy soaks, i. e., hand-washing in warm soapy water for four or five minutes, four or five times a day are started early to promote circulation and to mobilize joints.

The patient is encouraged to start active, purposeful use of the hand early, and is made to feel that he is to return to work as quickly as possible. Obviously, in some instances, many months are required to return a patient to work and here the task of keeping up the patient's morale falls on the surgeon's shoulders. Physical therapy by an understanding physical therapist is invaluable, but heat and massage and passive movements are not enough. Purposeful, active use, guided by a will to recover, is the most valuable physical therapy we have.

Finally, in assessing the results of surgery, and in measuring recovery of function, time is a valuable ally. What seems like a passable result in three months may be good at a year and excellent in two or three years. The surgeon should not be too hasty in reaching the conclusion that final recovery has been obtained.

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TREATMENT OF CHRONIC DISCOID LUPUS ERYTHEMATOSUS WITH ATABRINE *

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PRELIMINARY REPORT

The effectiveness of atabrine in chronic discoid lupus has recently been reported by a few investigators. Popoff and Kutinscheff [1] were apparently the first to recognize its effectiveness in this condition. They presented 6 cases, at a meeting of the Sofia Dermatological Association, in 1941; these patients showed remissions of their disease while taking this drug. More recently, Francis Page [2] described 18 cases treated with atabrine hydrochloride, with only 1 case failing to improve. In this country, Wells [3] produced remissions in 9 out of 12 cases; Cramer and Lewis [4] had good results with 5 out of 6 cases. Sawicky et al.[5] report 21 cases with prompt and definite improvement. Six cleared completely and have not relapsed. Three failed to respond satisfactorily, or relapsed either during therapy or shortly after its cessation.

We have combined in this report the cases treated in our private practice with those observed on our services at the Louisiana State Charity Hospital. In all, 27 cases have been observed for a sufficient length of time to make practicable a few

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observations on the use of atabrine in this condition.

There were 18 cases of the chronic discoid variety without much evidence of scarring.

Twelve of these responded very well to this therapy. Their lesions were markedly reduced in number, the papular lesions flattened out, and erythema disappeared, leaving a flat, lightly pigmented area. This was true in spite of the fact that no special effort was made to protect them from the sun other than the use of sun protective creams. Ten of the 12 are still on the drug, however, and only 2 of these 12 have been able to stop the drug entirely. Since all but 2 of the 12 had received gold and bismuth therapy without much benefit, they were delighted with the apparent cures with atabrine, and the ease with which it is given in comparison to the gold and bismuth. Not one of them objected to the yellow color of the skin. We agree with others that improvement is directly proportional to the depth of skin staining from atabrine.

Four of the 18 patients relapsed while still on atabrine therapy, and bismuth and gold therapy was substituted. These must be classified as failures.

Two of the 18 patients relapsed extensively within five days after therapy was discontinued. Retreatment was not as successful as was the first course of therapy. Both relapsed even while their skin retained a deep stain.

There were 6 cases in which heavy, thick, hyperkeratotic scarring was the predominant feature of the disease: In 2 of these there were new erythematous lesions present, which disappeared with atabrine therapy. The other 4 cases showed little response other than a possible slight reduction in the amount of erythema present in the scars.

Two cases of chronic disseminated lupus erythematosus with subacute flare-ups received atabrine therapy. In one the result was good and in the other there was not much improvement. Both had received this therapy for four weeks.

One case of the Senear-Usher form of the disease had reached a static condition with cortisone and ACTH therapy, but atabrine brought about further improvement.

One of the discoid cases without scarring was of particular interest. He was unable to take bismuth and gold because of severe reactions. The lupus was spreading at a rather alarming rate. An additional discouraging factor was a family history in which a younger sister had died of acute disseminated lupus erythematosus in 1943, and a maternal aunt was in the hospital with acute disseminated lupus complicated by pregnancy. The first course of therapy, consisting of two hundred 1½ grain tablets of atabrine cleared him up completely. He had a recurrence within three weeks, and retreatment with atabrine is proving to be less beneficial than the original treatment.

Two cases, which were of the chronic discoid variety with little scarring had full time outdoor employment with maximum exposure to sunlight. One of these was a railroad car repairman (welder). He had lesions on face, back, chest, and arms, which cleared up almost entirely under atabrine therapy, in spite of the fact that he has maintained a full work schedule. The other is a shrimp fisherman, who, had a sun type of lupus with a scattering of lesions on his forehead and temple regions, which had been present only a short time. The lesions cleared completely on atabrine therapy, although he has continued to work daily at his regular employment. His skin staining was deeper than any of our other cases.

DOSAGE

It has become more or less customary to give one tablet, 1½ gr. (0.1 gm.), three times a day for one week, then one tablet twice daily for one week, or until the skin is stained a deep yellow color. A maintenance dose of one tablet daily is then given. In most instances blood counts were made at the end of each 100 tablets.

Reactions have been minimal. One pa-

tient had a mild general toxic type of erythema which cleared up promptly when the drug was discontinued. He subsequently resumed treatment on his own initiative, as he felt that he was getting a recurrence of the lupus. There were no further difficulties with his rash.

The usual reactions encountered by others were reversible upon discontinuing the drug. They consisted of a rash on the palms (hyperkeratotic), soles, and thighs, with itching. Sawicky,[5] however, appended to his article report of a death due to aplastic anemia in a case of lupus erythematosus treated with atabrine. I have discussed the reaction phase of this drug with some of the internists and men who had vast experience with its use in the armed forces, and all are of the opinion that it is an extremely safe drug to give. Brunsting felt that it should not be used in the acute disseminated variety of the disease, as he had observed apparent bad effects from its use. Others have employed it in this type with benefit.[2, 3]

MODE OF ACTION

The probable mode of action was discussed at length by Page. He felt that atabrine reduced light sensitivity, and proceeded to show some studies demonstrating the effect of atabrine on the minimal erythema dose of ultra-violet light. After ten days of atabrine, the M. E. D. was as much as four times as great as before treatment, returning to near normal within ten days after it was discontinued. Use of 1 per cent atabrine ointment had no effect on the M. E. D.

CONCLUSIONS

1. Atabrine is effective in the treatment of discoid lupus erythematosus. It is particularly useful in that it can be given without the necessity of too frequent observation of the patient. It has little effect on scarring.
2. It is economical.
3. It is safe to use.
4. Recurrences, when they do occur come soon after the drug is discontinued (one, within five days).
5. Retreatment is apparently not as effective as the original course of therapy.

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DISCUSSION

Dr. Leslie K. Mundt (New Orleans): This paper, along with several other reports recently published, confirms the beneficial effects of atabrine in discoid lupus erythematosus. Drugs have been used empirically with success over and over again throughout the years and this has resulted in significant advances in every field of medicine. On numerous occasions some new treatment has led to knowledge of the cause and nature of the disease for which it was used. The atabrine treatment of lupus illustrates that as practicing physicians we should be alert and eager to investigate and experiment with new methods of therapy. The important factor is that the treatment must benefit the sick patient. Its rationale can be worked out later on.

The status of the treatment of discoid lupus erythematosus prior to the introduction of atabrine was well summarized by Michelson in his paper on discoid lupus at the Academy of Dermatology some three years ago. He stated that there was no treatment then in use that had the slightest effect on the disease. Most of us in this room would agree with that statement.

My introduction to atabrine in lupus erythematosus goes back several months. In the *Schoch Letter*, Callaway reported the experience of a physician who used the drug successfully in one of our Army Hospitals in Germany. Callaway added some cases of his own and confirmed this encouraging report. Since then I have treated some 20 patients with atabrine and consider it the treatment of choice for the disease. All of my patients have been helped and about half of them have cleared up 75 to 100 per cent. All have remained clear on a maintenance dose of 100 mgm. two or three times weekly. In those cases in which the drug has been discontinued it is too early to know about the percentage of relapse. Atabrine seems to especially benefit the mild, edematous, patchy, sun-sensitive type of case that is seen so often on the exposed areas.

As far as I know the mode of action of atabrine is not known. It is interesting that two antima-

larial drugs, quinine and atabrine, are used and have been found effective in this disease.

Severe reactions to atabrine have been reported recently so that patients should be checked carefully, especially for an early blood dyscrasia. These reactions probably follow the initial large doses because hundreds of thousands of troops in the Pacific during World War II received the drug in doses of 100 mgm. daily for many months without any reported serious reactions.

Most authors have stressed that atabrine is recommended only for discoid lupus erythematosus and that it does not benefit the other forms of the disease. Brunsting has actually warned against its use in subacute and acute systemic lupus.

In addition to atabrine, Goldman in a communication in the May *Schoch Letter* now reports the effectiveness of chloroquine diphosphate in discoid lupus erythematosus. It is of value although it acts slower than atabrine, and it is definitely less toxic. It is given in dosage of 0.25 grams twice daily for seven to fourteen days and then once daily for two to three months. The toxic reactions are of a minor nature such as headaches, weight loss, nausea, and diarrhea. It does not stain the skin and there are no severe systemic reactions. Those who cannot tolerate atabrine can be changed to chloroquine. Chloroquine is used in the treatment of amebic hepatitis and extensively in malaria so that here is another antimalarial drug used in discoid lupus.

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THE MODERN TREATMENT OF ACNE VULGARIS *

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This presentation, a summary of modern therapeutic facilities, should interest two types of practitioners. The first group includes those who tell their patients that "nothing needs to be done; nothing can be done; you will outgrow this condition." The second group comprises the more enlightened practitioners who are aware of the need of successfully treating a disease of such high morbidity and prevalence.

Acne vulgaris, a disturbing, often disfiguring disease, affects approximately 80 per cent of our population at puberty.[1] Sequelae, in the form of aesthetic disfigurement, emotional reactions, psychic and cutaneous scars, are obvious in all social levels of every community. Although common in all climates, acne vulgaris is more prevalent and severe in hot, humid climates. During World War II, physical disability produced by acne was reflected in rejection at induction centers, limitation of type of service, high incidence of acne at sick calls, a notable number of hospitalized cases, releases from service, and compensation cases.

Because of a desire to establish a sole cause and to direct treatment accordingly, progress in the treatment of acne vulgaris has been delayed for decades. Although the cause is unknown, at the present time, the belief is that acne vulgaris is due to multiple factors. The scope of this presentation is too limited to discuss the pathogenesis of the condition other than to state that the disease involves the pilosebaceous glands of the skin, the dysfunction of which may be due to a number of external and internal influences.

The following list of therapeutic measures, far from complete, contains the currently popular approaches to the problem of acne and represents the various facilities used in the author's practice. Several original measures are included and the author's experience with Kutapressin ® is discussed in detail.

SYSTEMIC MANAGEMENT

The importance of a complete history and physical examination cannot be too strongly stressed, and of no less importance is the psychological approach. Upon the initial visit, effort should be made to establish optimism, patient-responsibility, and to prognosticate exacerbations and rationalize them for the patient. Health deficiencies must be corrected with particular attention to proper diet and the regulation of eating habits and weight. Sufficient and moderate exercise is important. Possible foci of infection must be checked. In the presence of a low-grade anemia frequently related to acne, the use of ferrous sulfate, vitamin B_{12} or folic acid, is advised. If the basal meta-

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bolic rate is low, thyroid is indicated in selected cases and is of special value in cystic or nodular acne.

As a disturbance in ratio of hormones is thought to be one of the main factors of acne, estrogen is indicated in patients 18 years of age or older when there are associated menstrual disturbances. Sometimes estrogens are of benefit in male cystic acne. The drugs recommended are: (1) diethylstilbestrol, 0.5 to 1 mg., daily orally; (2) premarin,® 0.625 to 2.4 mg., daily orally, and (3) antuitrin® (chorionic gonadotropin) in adult acne. Antibiotics are given when pyoderma complicates, or in so-called pustular acne. Neomycin, bacitracin or bacitracin-polymixin combination are used locally. Penicillin or sulfonamides should never be used locally. Preferred systemically, is oral penicillin, 200,000 to 400,000 units of the "long acting" type. In severe cases, unsuitable for penicillin, aureomycin or terramycin may be used.

Autogenous or "stock" vaccines are used routinely in pyodermic cases or following antibiotic treatment to prevent relapse. Vitamin A is given if comedo formation is dominant and discontinued after three months. Recommended are the water miscible preparations, aqua sol A (U. S. Vitamin Corp.), acon (Endo Products), vi-alpha (Lederle) 75,000 to 150,000 units per day orally.

EXTERNAL MANAGEMENT

It is important that the patient receive instructions as to proper method of washing the skin. Office treatment includes the use of ultra violet light (alpine or cold quartz lamp) 2 to 3 times per week, graduating to erythematous or peeling dosage. The average initial dose is thirty seconds to each half of the face at a distance of 30 inches. X-ray treatment is probably the most valuable approach and is essential when others fail. It is important that this be given by a qualified specialist and as an adjunct to other dermatological treatment. X-ray therapy should never be given simultaneously with ultra violet light treatment.

When necessary, incision and drainage of lesions is done, with minimal incision of papules, nodules, and pustules. Cystic lesions require wider incision. When the comedo "sack" is ruptured, its contents are expressed with a comedo expressor. Scar bridges between double comedos are cut. For necrosis of the center of lesions, carbon dioxide snow stick or light desiccation is used. Peeling measures include: (1) phenol, (2) carbon dioxide snow slush technique, and (3) ultra violet radiation. Scars may be managed by the following methods: (1) marsupalization of indolent cystic, deep-seated areas; (2) paring of scar-bridges with scissors or scalpel; (3) phenol; (4) carbon dioxide snow; (5) desiccation; and (6) sandpaper technique, a practical and satisfactory method for office use under local anesthetic.

For home treatment, hygiene is stressed and the following soaps advised: acne aid detergent soap (Stiefel), basic sulfur soap (Duke), and cosmasul (Cosmata). Local treatment must be cosmetically desirable and lotions are preferred over creams. Where "show" lotions are undesirable, it is best to use: rescorcin 2 to 5 per cent; salicylic acid 2 to 5 per cent, in alcohol 70 per cent. Lotions found satisfactory are: surco lotion #1 (Alma Laboratories) and sulforcin (Texas Pharm.). Types of creams recommended are acnomel (Smith, Kline and French) and sulforcin base (Texas Pharm.). When acne has been controlled, treatment containing sulfur and resorcin is discontinued and the following vehicles are advised: surco lotion #2 and foundation lotion for oily skin (Almay). Only in severe acute cases are the following compresses indicated: vleminchx solution; Burow's solution, and saturated solution of boric acid.

RESULTS WITH KUTAPRESSIN®

The rationale for the use of crude liver extract in treating acne vulgaris has not been established; however, many dermatologists believe it to be of benefit. Sutton [2], in 1928, first recommended crude liver extract for this condition and others including Stokes [3], Andrews [4], and Mitchell

Heggs [5], have reported similar success.

In an attempt to determine the usage locally of this agent, members of the Louisiana Dermatological Society were sent the following questionnaire; "Do you find crude liver injections helpful in the treatment of acne?" Of 23 replies, 11 answered yes, 10 no, and 2 had no experience. Since crude liver is used in the treatment of seborrheic dermatitis, this form of acne associated with marked seborrhea would be expected also to respond. In the author's personal experience, such cases are most apt to benefit by this drug. Encouraged by these and similar reports Marshall [6] was led to isolate a substance from crude liver which he thought to be "S" (skin) or antiacne factor. Because of its vasoconstrictor action in the skin, this substance was called kutapressin.®

Marshall's success with the use of kutapressin ® has been confirmed by other investigators whose reports, however, were based on relatively small series of cases. A large, well-controlled group of 157 cases in military personnel was treated by Knox [7] and observed by the author while serving as Civilian Consultant in Dermatology at a large Air Force Base. Other than kutapressin ® these cases received minimal treatment including frequent washings of skin and hair, low fat diet, occasional acne surgery, and infrequent local and systemic antibioties. No hormones, vitamins, lotions, vaccines, or radiation were used. The average dosage was two or three times per week. Fifty-seven per cent of the cases showed good or excellent response; 30 per cent were moderately improved; 7 per cent slightly improved, and 6 per cent unimproved. Photographs taken before and after treatment of more than 40 cases confirmed the clinical deductions. Knox was impressed by the satisfactory response of cystic acne, usually refractory to treatment, and Nierman's [8] experience was similar.

Concurrently with the treatment of the above group, the author substituted kutapressin ® in the treatment of 76 private cases. Some of these were old cases that had been on liver; others were new cases started on kutapressin. The majority of the group received 2 cc. in one injection weekly as an adjunct to other methods thought to be indicated in individual cases. Knox's success was not duplicated. This may have been due to the low dosage given. Those few cases able to come to the office two or three times per week for treatment did show more improvement.

It is the author's impression that kutapressin ® was most effective in skins with marked erythema. This confirms the cutaneous pressor effect reported by others. Severe acne and seborrheic states remained refractory. It was difficult to appraise the patient's subjective evaluation of the drug since it lacked the painful characteristic of liver. It is significant that a number of patients who took injections at home through self medication three or more times per week responded more favorably. This seems notable since these patients were on a restricted therapeutic regime of home treatment. No untoward reactions to the drug were noted. Knox's [15] experience was similar. Duration of treatment was from six to twelve weeks. Before this study was completed the supply of kutapressin failed and the patients returned to liver injections with no appreciable alteration in their progress. The exceptions were those with marked seborrhea, who improved; a few with prominent erythema requested a return to kutapressin.

COMMENT

The above listing of therapeutic measures is offered to emphasize that sound and well-established approaches to the acne problem do exist.

Individualization rather than routine treatment is urged by the author. Some mild cases may respond to improved hygiene, while others require all known therapeutic approaches. Acne, most common in youth, should be treated without adversely affecting development. Rigid and prolonged dieting may be deleterious to the patient and aggravate the condition, thereby defeating the purpose of therapy.

The old axiom, "Treat the patient and not the disease," is most applicable. The success obtained by the author with crude liver seems to justify its continued usage, although a satisfactory rationale remains unexplained. The benefit derived may be due to a tonic effect which seems indicated in the majority of cases. It is the author's opinion that crude liver extract is preferred to multi-vitamins in that the latter, although given conscientiously by the practitioner to improve general health are prone to aggravate acne. Among the disadvantages of liver are its painful reaction, occasional localized and generalized allergic reactions, and its unsought but often confusing hematopoietic effect. Whether or not it is the antiacne factor in crude liver, kutapressin ® has been shown in previous reports and in the author's personal observations to be of adjunctive value in the treatment of acne. Further studies are necessary to determine which cases should benefit, and what is the correct dosage. It is hoped that refinement in production will lead to a more concentrated and less expensive drug.

SUMMARY

Acne, a disease of high morbidity and important sequelae, must be treated. Modern measures are summarized. Kutapressin, a new adjunctive drug in the treatment of acne, is discussed and experience with its usage is given.

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INTRAOCULAR FOREIGN BODIES AS A SURGICAL EMERGENCY *

LOUIS A. BREFFEILH, M. D. †
SHREVEPORT

Since World War II, many articles [1-5] have been published on the subject of intraocular foreign bodies. This subject has been thoroughly discussed in regard to diagnosis, localization, and preoperative and postoperative treatment. The importance of the time that has elapsed between the entrance and the removal of the intraocular foreign body has not been given sufficient consideration.

In studying the eyes that were removed because of the presence of a retained foreign body, firm fibrous attachments to the vitreous and the retina were always found. These attachments were a result of the body's defenses to a foreign substance by exudative and cellular response. This "walling-off" of the foreign body results in a decrease in the magnetic attraction. Since most foreign bodies are magnetic and small, it is imperative that the surgical removal be completed as soon as possible. In those cases in which a foreign body has been retained for a long time it is often necessary to surgically remove the surrounding vitreous along with the foreign material. This procedure usually results in an escape of a portion of the liquid vitreous. Lancaster [6], Guy [7], Hull [8] and many other observers have stressed the importance of early surgical removal of intraocular foreign bodies.

HISTORY

The history is important only if the patient is aware of an intraocular penetration. The course of the foreign body and the type of material that may have entered the eye may be obtained from the patient. Very often the patient does not know of the presence of an intraocular foreign body. In the 6 cases presented, 2 patients were not aware of intraocular

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penetration. One thought a drop of oil had entered his eye while he was working on the crank shaft of a truck; the other sought medical attention twenty-four hours after the injury because of an irritation of the eye. During routine examinations 2 other patients were found to have evidence of ocular penetration. The first patient had a small corneal scar near the limbus. A second retinal scar was found that indicated that a foreign body had traversed the eyeball. He was unable to remember any ocular injury. The second patient was seen on consultation for a chronically inflamed eye. A small tear was discovered in the iris and the diagnosis was confirmed by x-ray examination.

EXAMINATION

The examination of the eye of a patient with a suspected foreign body must be complete. The external gross examination should be carried out with proper illumination and magnification. A slit lamp should be used for a more detailed study. The pupil should be widely dilated, and a thorough internal examination should be completed with the ophthalmoscope. The foreign body can often be seen and easily localized. The presence of vitreous and retinal hemorrhages usually indicates an ocular penetration. A gonioscope may be used if the foreign body is localized in the anterior chamber. On several occasions the use of the hand magnet has aided in localizing the foreign body. This procedure should be used with extreme caution and only in those cases in which the foreign body is free in the anterior chamber.

X-RAY LOCALIZATION

X-ray studies may be completed when the patient is admitted to the hospital for emergency surgery. The anterior, posterior, and lateral views may be sufficient for medicolegal purposes, but once a foreign body has been diagnosed the localization should be completed. The Sweet localization method is preferable, but when the special equipment needed for this procedure is not available, the wire ring method may be used. A wire ring from 22 to 26 mm. in diameter, can be made from a strand of wire available in most operating rooms. The ring is then placed in the conjunctival cul de sac under ½ per cent pontocaine anesthesia. The patient is then instructed to look up and then down in order that two x-ray exposures may be superimposed on one film. A shift of the foreign body may be easily seen on the x-ray film. One can determine the approximate location of the foreign body by this method. A dental x-ray film placed at the inner canthus will confirm the diagnosis of a foreign body in the anterior chamber.

SURGICAL PROCEDURE

Upon completion of the localization, the surgical approach must be considered. If the foreign body is in the anterior chamber or lens, the anterior approach is preferred. If it is located in the vitreous or retina, it may be more easily removed by the posterior approach. Each case is an individual problem and must be considered as such. If the foreign body is located in the anterior chamber, either a limbal incision or a widening of the wound may be satisfactory for its removal. Occasionally, it is imbedded in the iris and an iridectomy may be necessary. If the anterior capsule of the lens has been penetrated, as much of the lenticular substance as possible should be removed by irrigation. This will hasten the lenticular absorption which is slow and takes from three to six months for completion. The age of the patient and the size of the penetration are determining factors for the rate of absorption. Local cortisone[9,10] has proved a valuable agent in minimizing the ocular irritation and controlling the ocular tension. The conjunctival flap is preferred in those cases in which the posterior lens capsule has been penetrated. This facilitates closure because vitreous usually presents in the incision once the foreign body has been removed.

The posterior approach is made through the conjunctiva as near to the foreign body as possible. While operating under local anesthesia, the patient will often aid in localizing the site for the incision by a

pulling sensation when the magnet is applied. The Berman localizer may be used for a more accurate localization. Electric diathermy is then applied around the site of the incision to prevent a retinal detachment. A partial sclera incision is then made and interrupted silk sutures are placed in the sclera. The incision is then completed to the choroid and the foreign body is removed by magnetic attraction. The Lancaster hand magnet has proved satisfactory for this procedure. A bead of vitreous usually presents when the foreign body has been removed and it is advisable that it be left alone and the previously placed sutures tied. An excision of the bead of vitreous usually results in an escape of liquid vitreous. The conjunctival incision is then closed. Atropine and antibiotic medication is instilled in the conjunctival sac and both eyes bandaged. The patient is then treated as a postoperative retinal detachment case which includes prolonged bed rest and pinhole glasses.

All intraocular foreign bodies should be considered as bacteriologically contaminated, as stressed in the work of Leopold.[11] Tetanus antitoxin or toxoid is administered as indicated. Antibiotic medication is also administered.

Six intraocular foreign body patients were treated in the past three years. In all cases the foreign bodies were magnetic and were successfully removed. In 3 patients the foreign bodies were located in the anterior chamber; and in 3 patients, in the posterior portion of the eye. Three of the patients were Air Force personnel, and I should like to take this opportunity to thank the United States Air Force and the medical staff of the Barksdale Air Force Base Hospital for their cooperation in the study of the cases presented and for their permission to utilize these cases in this presentation.

CASE REPORTS

Case No. 1.—The patient was a 32 year old white male who had a foreign body enter his left eye at about 9:30 a. m. while working on a sawmill band saw. He was first examined at 2 p. m., and the foreign body was found to be in the anterior chamber. Surgery was performed at 5 p. m. through a limbal incision. The postoperative recovery was uneventful and he was discharged with an uncorrected vision of 20/20.

Case No. 2.—The patient was a 30 year old white male who had a foreign body enter the left eye at about 10:30 a. m. while driving an iron pipe into the ground. He was first examined at 1:30 p. m. and a scleral penetration was found near the limbus. The lens was not damaged and a foreign body was seen on the retina just above the optic nerve head. Vitreous and retinal hemorrhage were also present. He was admitted to the hospital for surgery and a Sweet localization completed. The foreign body was removed through the posterior approach at 5:30 p. m. The postoperative convalescence was uneventful and he was discharged with an uncorrected vision of 20/20.

Case No. 3.—The patient was a 23 year old white male who had a foreign body enter his right eye at about 3 p. m. He was prying an engine cowling from a B-29 with a screw driver at the time of the accident. The foreign body was found embedded in the iris and lens. Surgical removal was performed at 6 p. m. through a limbal incision and iridectomy. Lenticular absorption was completed by the fourth month and vision was correctable to 20/25 with an aphakic lens.

Case No. 4:—The patient was a 24 year old white male who had a foreign body enter his left eye while he was cutting a cotter pin. As the eye was only temporarily painful, he did not seek medical attention until the following morning. The foreign body was seen in the anterior chamber lying on the iris. Surgical removal was completed at 1 p. m. by widening the corneal wound. The postoperative convalescence was uneventful, and he was discharged with an uncorrected vision of 20/20.

Case No. 5.—The patient was a 26 year old white male who had a foreign body enter his right eye at about 10 a. m. This man thought that a drop of oil had entered the eye while he was tapping a drive shaft of a truck. The examination revealed a laceration of the cornea and a penetration of the lens. The foreign body was localized in the posterior inferior quadrant of the eyeball by using the wire ring method. Surgical removal was completed by the posterior approach at 4 p. m. The lenticular absorption was completed by the fifth month. During this period local cortisone was used to decrease the intraocular tension. He was discharged with a corrective vision of 20/20 with the use of an aphakic lens.

Case No. 6.—The patient was a 27 year old white male who had a foreign body enter the left eye at about 10:30 a. m. At the time of the accident he was cutting a cable on a drilling rig. He was first examined at 2:30 p. m. and found to have a large corneal wound and a lenticular penetration. The x-ray examination revealed a large foreign body located in the lens and vitreous of the eye.

The foreign body was so large that it was necessay to remove it through a wide limbal incision. The conjunctival flap was used as a precautionary measure since vitreous was present in the anterior chamber and further loss of vitreous was anticipated. Upon the removal of a very large foreign body, the vitreous presented in the incision and the previously placed conjunctival sutures were tied. The postoperative convalescence was uneventful and the lenticular absorption was completed by the fifth month. He was discharged with a corrective vision of 20/40 by using an aphakic lens.

SUMMARY

The pathology involved in the reaction of the eye to a foreign body was discussed, and the need for the early surgical removal was stressed. The author's method of handling an intraocular foreign body was presented. The case histories of 6 patients with intraocular foreign bodies were summarized.

CONCLUSIONS

1. Intraocular foreign bodies should be removed as soon as possible.

2. The x-ray localization should be performed when the patient is admitted for surgery.

3. The Lancaster hand magnet is satisfactory for the removal of magnetic intraocular foreign bodies.

4. All foreign bodies must be considered as bacteriologically contaminated, and antibiotic medication administered.

5. Each patient must be considered as an individual problem, and the surgical approach planned accordingly.

6. Local cortisone is effective in minimizing the ocular irritation and in controlling the ocular tension in patients with a lenticular penetration.

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MANAGEMENT OF CERTAIN COMPLICATIONS IN CATARACT SURGERY

CLIFTON B. FLINN, M. D.

MONROE

The technique of cataract surgery has been so greatly improved since my earliest hospital training, in 1932, that today 90 to 95 per cent of patients can expect good visual results rather than the 70 to 75 per cent of twenty-five years ago. But it must be remembered that these were prepenicillin, precortisone, presuture, "hit and run" days. Many of the hazards have been lessened or removed and a comfortable, short, postoperative convalescence is the rule. Some brave surgeons even operate on the second eye within four or five days.

However, no one can be certain of perfect patient cooperation, or of the absence of infection, vomiting, coughing, psychosis and hemorrhage. Even the private patient who has had the most complete general and laboratory examinations may develop infections, hemorrhage, retinal detachment, or glaucoma. Very few of us go to the extent of testing for lens protein or drug sensitivity. Time and the patient's economic status necessarily limit the work-up. In the clinic or "charity" patient this laxity is much greater with the dependence placed on others who have less appreciation of these dangers.

Herein I want to discuss the more common difficulties which complicate my own particular method. The latter is an outgrowth of trial, error, and elimination of many techniques. Rather than a recital of statistics (some not too flattering), I

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will endeavor to give an impression gained over the years. Nothing original is claimed.

(A) VITREOUS PROLAPSE AND LOSS

This is by far the most frequent, and therefore the most important serious complication, occurring in 2 to 5 per cent of cases, even in the best of hands. Luckily for the patient, corneoscleral sutures are a "must" today, promoting and helping to insure early healing, early ambulation, less infection, and minimal loss of vitreous in the complicated case. A good suture line will result in less delay in the reformation of the anterior chamber. My final choice of suture is the preplaced Ruedemann, continuous, no knots or ties, with No. 6 black silk. This is used with or without a conjunctival flap. I like the idea, but have not yet tried thrombin and plasma solutions to agglutinate wound edges into a water-tight closure.

The use of forcep or suction cup, tumbling or direct delivery is a matter of individual choice and adeptness. I prefer the motor driven erisophake.

Once the hyaloid membrane breaks, the 12 o'clock suture must be pulled taut and all pressure of the lids relieved by lifting the lid sutures or speculum, if used. If the lens has not been delivered, a loop (not a spoon) is best to retrieve the lens effectively. After sutures are pulled tight the liquid vitreous can be pushed back by an air bubble. Normal viscid vitreous will cause much greater difficulty, but may be cut off and later partly replaced by normal aqueous or injected air, after two or three days healing. In the susceptible eye, secondary glaucoma is almost inevitable and miotics fail completely.

The round pupil is always striven for, if no iris synechiae prevents,—chiefly for optical reasons. It offers little barrier to loss of vitreous and may aid in treatment, if simple glaucoma supervenes.

Intracapsular delivery is always attempted, particularly, if iris disease preexisted. The result of this is more likelihood of vitreous rupture and loss, but the visual results warrant this risk. A traction suture in the superior rectus tendon will prevent much of the aimless movement of the nervous eye but is more dangerous than blocking of this muscle with procaine. Kirby advocates a suture in the muscle belly, but this procedure has always caused great hematomata in my experience. Sedation is helpful but never quite replaces personal confidence in the operator.

The one most valuable preventive is perfect akinesia of the orbicularis. Block of the extraocular muscles is helpful but total paralysis by retrobulbar procaine has been rare in my experience. O'Brien facial block is not always easily done and may not be complete when the operator, pressed for time, decides to go ahead. I believe the answer is intravenous curare, if a competent anesthesiologist is available.

Recently an eye was sectioned in which the vitreous was watery and found to be mixed with the aqueous corneal section. Naturally, much loss occurred and the eye appeared in a nearly collapsed state after tightening the suture. To my surprise, the patient did well and is going to have good vision. I was further surprised to find that I had neglected to read my notes of two years previous when the other eye had had identically the same findings at operation, and with equally happy results. All this was further complicated by the patient vomiting soon after the dressing was applied. Apparently, in fluid vitreous the deficit is made up with more aqueous. Total loss by expulsive hemorrhage has not been one of my unhappy experiences in the 600 cases reviewed for this paper. Infection of the vitreous body after such prolapse is something to be dreaded as nothing suffices and the eye must be removed. Be sure that the culture report is negative before operating in order to avoid medicolegal worries.

Several rules can be formulated:

1. Approach all cases as if vitreous were fluid.
2. Be alert when the lens and iris push forward after section.
3. Insist on a relaxed patient.

4. Avoid all undue pressure by instrument or too great amount of retrobulbar injection.
5. Be unhurried before and after sectioning the cornea.
6. Break all zonule fibers before attempting delivery or tumble the lens. The latter is possible only after total zonule separation.

(B) HEMORRHAGE

Everyone must operate on diabetics and the aged where cataracts are concerned. This means that bleeding will frequently occur at operation and postoperatively, even though the blood sugar is controlled and diastolic blood pressure is below 110. Mild anterior chamber hemorrhage, as in traumatic cases, will resolve and small amounts in the vitreous body wil often clear in a year or less. Massive vitreous hemorrhage is fatal in all eyes. Severe bleeding in the anterior segment, if caught in time, may be removed only to recur, resulting in occlusion of the pupil or corneal staining.

Axiom:

1. Always have the cautery at hand.
2. Precheck the coagulation and bleeding time and the sedimentation rate.

(C) POSTOPERATIVE IRIS PROLAPSE (WITHOUT VITREOUS HERNIATION)

Iris incarceration is the least serious of the difficulties we have discussed. It means that the suture line was not too good and pressure was applied by the patient's lids, or that pressure built up in the unreformed anterior chamber and forced the iris out. Pain on the second or third day signals this mishap. The patient reports feeling a gush of fluid followed by pain. Infection threatens, hammock-shaped pupillary deformity is certain, occlusion is possible.

Preventive measures are:

1. Air bubble instilled in anterior chamber.
2. Multiple iridotomies between sutures or even total iridectomy for the persistent prolapse at operation.
3. Prolongation of the akinesia by addition of epinephrine to the procaine —plus lid suture.
4. Use of miotics at first dressing if the iris was not injured.

The cure is:

1. Resect the early prolapse or leave it to atrophy if discovered so late that it is covered by conjuctiva, especially if small.

Do not use acid or actual cautery. Iritis inevitably sets in and sympathetic uveitis is a possibility.

UVEITIS

As to the danger of uveitis, whether traumatic, phaco-anaphylactic or smypathetic, one must take all precautions of preliminary examination of both eyes, plus a good history. In addition, complete medical and dental examinations must be required. A capsule ruptures occasionally, in spite of all precautions. Unnecessary trauma and introduction of infection by careless use of instruments can be avoided. Here, the hormone, cortisone, is the surgeon's best friend.

CONCLUSION

Accidents of cataract surgery are inevitable but today they can be kept to a minimum even in the dangerously complicated case, provided all precautions are taken before, during, and after surgery.

AN EFFECTIVE METHOD OF PERSONAL ORAL HYGIENE PART II*

CHARLES C. BASS, M. D.
NEW ORLEANS

DESCRIPTION OF THE METHOD

Above, attention has been directed to the essential local etiological conditions in caries and in periodontoclasia—conditions without which lesions of these diseases do not originate, and existing lesions, with rare exceptions, do not advance further. With this information known and clearly understood it is evident that these conditions must be prevented or minimized to prevent the occurrence of the lesions and the advancement of existing lesions.

Treatment of existing lesions is a matter for the judgment and experience of

* Part I was published in the February 1954 issue of this Journal.

the dentist to decide. Some caries lesions require fillings; others may require trimming and smoothing of overhanging edges, perhaps enlarging the cavity, so it can be cleaned out well by the patient; still many others require nothing but watching.

It is necessary that all concretions (calculus) on the tooth within the periodontoclasia lesion be scaled off and the surface of the tooth be made as smooth as is practical. Masses and rough surfaces of calculus are very much in the way of the patient's cleaning the tooth, especially within the crevice. It is very important that removal of the calculus include that in the deepest part of the pocket where the lesion is advancing. This calls for skill, patience and conscientious work.

There is no need or justification for the extensive mutilating gingivectomies sometimes done in this disease. Except in the case of some far advanced stage lesions and under special circumstances, thorough cleaning of the teeth by the dentist followed by the method of personal oral hygiene described below, results in rapid subsidence of inflammation and of suppuration of the tissues involved. No further advancement of the lesion occurs.

Locations on the teeth which must be cleaned.—The important locations on the teeth which the patient must clean are occlusal depressions (pits and fissures); areas which are more or less protected from functional friction, such as the embrasures and interproximal surfaces; and the surfaces at the entrance to, and especially those within, the gingival crevices.

The material to be removed (cleaned off or out) consists of more or less food material, in various stages of decomposition, which has been retained since the previous cleaning, and of bacterial film material which has grown there since the previous cleaning. All such material is soft and is easily dislodged by the right (proper) application of toothbrush bristles and of the filaments of dental floss. There is no other way by which they can be physically and effectively dislodged by the patient—no other way by which he can clean his teeth at these important locations.

Right kind of toothbrush and dental floss.—Effective cleaning of the teeth can be done only with a brush and floss, the bristles and filaments of which can be effectively applied to the areas to be cleaned. After having full information as to the functions to be performed and measurements of the spaces and places to be cleaned, and after much experimentation, I have ascertained what I believe are the optimum characteristics of brushes and of floss for the purpose. The exact details have been published,[19,-72] and the reasons for these specifications were given. In my opinion, based upon my own knowledge and experience, brushes or floss that deviate to any considerable extent from these exact specifications are inappropriate and less effective for the purpose, to whatever extent they so deviate.

Briefly, the specifications of the brush are:

1. Plain straight-handle design; over-all length about 6 inches; width about 7/16 inch; 3 rows of bristles, 6 tufts to the row, evenly spaced.

2. High quality nylon bristles, about 80 per tuft, .007 inch diameter, straight trim, finished to 13/32 inch length.

3. Ends of bristles ground and finished to hemispherical shape or at least enough to eliminate all sharp points and rough edges.

4. A similar brush of reduced size for the use of young children should have an over-all length of about 5 inch, .005 inch bristles, finished in the same way to 11/32 inch length.

Briefly, the specifications of the floss are:

1. Material—high tenacity bright nylon yarn (Type 300), 2 denier per filament.

2. Construction—made by twisting to-

gether 5 threads of 70 denier, 34 filament yarn.

3. Twist—3S twist, steamset.

4. Size—350 total denier.

5. Manufacturer's technical designation for this floss is: 70-34/5 S 3, Nylon 300, steamset.

When teeth must be cleaned.—Practically all caries activity occurs at night during rest and sleep. During the daytime movements and activity of the mouth, tongue, cheeks and lips result in frequent washing of the teeth and more or less changing of the saliva around the teeth including that at locations at which food material may be retained and decompose. Acids that may be produced are diluted and/or carried away, more or less, by such frequent changing of the surrounding saliva. Food material is also diluted or washed away, especially the easily dissolved parts of it.

Sugars and fermentable carbohydrates contained in particles of food material which is subject to frequent change of the surrounding fluid tend to leach out. Even food material retained within cavities gives up much of the sugar it may contain, from the frequent changing of the fluid with which it is constantly bathed.

All this activity and functions of the mouth by which fermentable carbohydrates and acid that may be produced are diluted or partially removed necessarily tends to reduce caries activity during the daytime.

On the other hand, during sleep the flow of saliva is greatly reduced. The movements of the mouth by which the saliva surrounding decomposing food material at the caries locations is changed and the products of fermentation are washed away or diluted, are also greatly reduced. The most favorable conditions exist at this time for caries activity.

It has been found by several workers [73-77] that caries incidence and activity are enormously increased in desalivated animals fed a cariogenic diet. Klapper and Volker [78] found that hamsters with only partial salivary gland impairment, when fed a suitable cariogenic diet, develop much more caries than controls. Apparently, the quantity of saliva is an important factor.

In xerostomia (dry mouth), in humans without exception,[79] there is rapid decay of the teeth. This is believed to result from the lessened washing and bathing of the teeth by saliva. In cases in which caries is much in evidence on one side of the mouth only, the patients invariably [80] have a preference for sleeping on the opposite side. This habit tends to dryness on the up-side which is where the greatest caries activity occurs.

It has been pointed out that the changing of fluid and washing of potential caries areas on the teeth which goes on, consciously or unconsciously, during the daytime is enormously decreased during rest and sleep. In addition, and what is even more important, flow of saliva is almost nil. Therefore, during sleep, the conditions are quite similar to those of desalivated animals or of humans with xerostomia. Since conditions which permit and promote caries activity exist mainly at night during sleep, it is evident that to prevent such action at that time, the teeth must be cleaned effectively before retiring.

So far as caries activity is concerned, if the teeth are thoroughly and properly cleaned at night before retiring, there follows a long period during which there is no acid production, because there is no fermentable carbohydrate food material present to produce it. This period coincides with the period during which caries activity otherwise occurs. The cleaning also dislodges or removes much of the bacterial film material at the vulnerable areas. Not much growth of the remnants —stumps and stems—of such microorganisms occurs during the night, for lack of suitable substrate for their growth which food material, if present, would provide.

The time the teeth must be cleaned for prevention of periodontoclasia activity is indicated by somewhat similar consider-

ations to those relative to caries activity. Usually food is taken into the mouth at several different times during the day. Remnants of food—solutions, microscopic particles, some larger—tend to lodge and be retained in protected areas at the entrance to the gingival crevices. Some may be forced into the crevice for short distances. In addition, larger tough particles may be retained between the teeth and press upon the interproximal gingiva, sometimes extending into the crevice. During the daytime the activities and functions of the mouth, and the abundant flow of saliva, result in washing away irritating material. If, however, it is retained over long periods of time during quiet and sleep, and minimum flow of saliva, it causes more or less continuous irritation of the tissues. Most favorable conditions exist for maximum growth of bacteria. If on the other hand the teeth are thoroughly cleaned at these locations, at night before retiring, there follows a long period during which there is no such irritation from decomposing food material, and there is little growth of bacterial film to advance into the crevice.

Thorough proper cleaning of the teeth by the necessary method described herein, not only removes retained food material and dislodges and removes bacterial film at and near the entrance to the gingival crevice, but the bacterial film on the tooth within the crevice all the way down to the very bottom of the lesion is mostly dislodged and removed. Little growth takes place during the night.

Removal of irritating material at the entrance to, and within, the gingival crevice permits rapid subsidence of inflammation and healing of the ulcerated crevicular gingival tissue of existing lesions. It is perfectly evident that for prevention of periodontoclasia and prevention of further advancement of existing lesions, the teeth must be cleaned at night before retiring.

Thorough cleaning of the teeth at night before retiring is essential for prevention of both caries and periodontoclasia. Notwithstanding the best job that can be done, there occurs more or less growth and accumulation of bacteria in the mouth at protected locations on the teeth and elsewhere during the night. It makes for somewhat more cleanliness and less decomposition of food in the mouth during the daytime if the teeth are brushed and vigorously rinsed in the morning before breakfast.

How to brush the teeth.—The most important areas to be cleaned with the toothbrush are (a) the occlusal pits and fissures, (b) the proximal surfaces in the sulci between the teeth as far as the bristles may go, (c) the surfaces of the teeth within the gingival crevices to the extent they are accessible to the application of the bristles of the brush. It is done by applying the ends of the bristles to the area with firm pressure and moving the brush back and forth ("vibratory motion") with short strokes, thereby dislodging soft material by the digging action of the ends of the bristles wherever they can be applied.

The bristles of the right kind of brush are smaller, therefore more flexible (easy to bend) than those of other brushes; they are all of the same length; the tufts are properly spaced for most effective use; (microscopically) each bristle is round or smooth on end. This brush was designed and the specifications for it were determined [19] after first having accurate information as to the conditions to be met and the size and shape of the spaces to be cleaned with it.

All the surfaces of all the teeth to which the bristles of the brush can be applied, should be brushed. A good routine is to brush the buccal and labial surfaces of all the teeth first, then the occlusal and lingual surfaces of the grinders in all four quadrants, and finally the lingual surfaces of the anterior teeth.

In brushing the buccal, labial, and lingual surfaces the bristles should be forced directly into the gingival crevices and into the sulci between the teeth, at about a 45 degree angle to the long way of the

teeth. With the bristles forced into the crevices as far as possible, short back and forth movements of the brush dislodge all soft material which they reach on the tooth within the crevice. At the same time the teeth are cleaned above the gum in the sulci and between the teeth, as far as the bristles may go.

At first there is more or less bleeding from the inflamed crevicular gingiva, but this rapidly ceases as the inflammation subsides and the tissues toughen up. Thereafter no reasonable amount of vigorous brushing with this brush causes bleeding, except for such periodontoclasia lesions as may not have healed yet.

A good way to brush the buccal and labial areas is to close the mouth with the teeth nearly together, then put the brush inside of the cheek and brush the lowers and uppers alternately, on one side of the mouth, moving forward and across the anteriors and changing to the other side, brushing the teeth there in the same way.

The occlusal surfaces of the grinders are to be brushed by applying the bristles to the surface, pressing down firmly and moving the brush back and forth with short strokes. This digs out any soft material that may be present in the occlusal pit and fissure depressions.

Usually at this same time the back teeth are brushed on the lingual side in the same way as on the buccal side. The bristles should be directed firmly, at about a 45 degree angle into the sulci between the teeth and especially into the gingival crevices.

This is the time to brush around the back teeth, the most unclean and most neglected place in the mouth. There is a certain relaxation of the jaw (a certain opening of the mouth) which each person must learn for himself, which permits the application of the bristles of the tip (or toe) of this brush to be applied into the space around the back tooth in a way that no other brush could be applied. By the right pressure, application and brush movement one can learn to clean around his back teeth in a surprising and pleasing way. Soon one learns to brush simultaneously the occlusal surfaces, the lingual sides of the grinders, and around the back teeth, in each of the four quadrants.

Finally the anterior teeth are brushed on the lingual side, by directing the bristles of the heel or of the side of the brush into the gingival crevices and the sulci between the teeth at about the same 45 degree angle as at all other places.

Although we have described the brushing in several different locations as if it were done in separate stages actually one proceeds without distinction or separate stages until the brush has been applied, as best it can be, to all areas which can be reached with the ends of the bristles. Anyone who knows how, can brush the teeth as well as is necessary in less than one minute. It is not a matter of how long to brush but to *do it right by this method,* which is quite different—almost the opposite in important particulars—from methods generally advocated or followed. It consists essentially of forcing the ends of the bristles of a brush of appropriate specifications directly into the gingival crevices and into depressions where food material and bacterial film tend to accumulate, and by short stroke movements, dislodging and removing such material.

How to clean the teeth with dental floss.—By the above method of brushing, the bristles of the brush have been stuck in between the teeth and into the gingival crevices as far as they will go, from the buccal or labial side and from the lingual side, but there will be a place along the middle between the teeth where the bristles have not met. The proximal surfaces not reached by the bristles, and those within the gingival crevices, have not been cleaned. The only way by which these important areas can be cleaned is by the proper use of the right kind of dental floss. The optimum characteristics of dental floss for this purpose have been determined,[72] after first having ac-

curate information as to the conditions to be met and the functions to be served by it.

This right kind of dental floss consists of a large number of microscopic nylon filaments, not waxed, and not twisted except just enough to hold it together when in use. It is easy to understand that drawing (scraping) this bundle of microscopic filaments crosswise over a tooth surface would tend to cut off, dislodge and remove microscopic material that may be present there. The bacterial film and other material to be removed consists of microscopic particles.

Each person must be taught how to use dental floss right. Only a few people now know that the use of dental floss is necessary and those who do, in most instances, do not use it effectively for the purpose for which it is required.

For the purpose of cleaning the surface around the contact area, thereby preventing caries activity there, it is only necessary to pass the floss through the contact and back out. This cleans the proximal surfaces above the gum which have not been reached by the bristles of the brush.

For the purpose of preventing periodontoclasia, and preventing advancement of existing lesions, those tooth surfaces within the gingival crevices which cannot be cleaned with the brush, must be cleaned with dental floss. The foreign material on the tooth within the crevice, which causes and promotes the advancement of periodontoclasia, extends to the very bottom of the lesion. Therefore, to remove this material the floss must be carried to the bottom of the lesion.

The floss must be held firmly against the tooth and drawn outward (perhaps sometimes slightly endways also) so as to cut off and dislodge the bacterial and other microscopic material on the tooth within the crevice. The large number of separate nylon filaments of which the floss is composed, when drawn crosswise over the surface of the tooth from the bottom of the lesion outward, not only dislodge microscopic material but much of this is retained between the filaments and is removed with the string.

It does not matter what system is followed in cleaning the teeth with dental floss just so the floss is carried to the bottom of the crevice and then drawn firmly across the surface of the tooth from the bottom of the crevice outward. Different people develop their own technic and manipulations for cleaning their teeth with dental floss. They have to be taught by someone who knows how it should be done and why. The person must be shown that he has diseased gingival crevices, that the teeth are unclean within them, and that the floss must be carried to the bottom of the crevice in order to clean the tooth at this important location.

After considerable experience in presenting this method to a good many dentists and dental students, and in teaching other people how to clean their teeth with dental floss, this author has not found any change needed in the detailed directions he published several years ago,[1] which are quoted verbatim as follows:

1. Cut off a piece of floss about 2 to 3 feet long.

2. Wrap one end with 2 or 3 turns around the first phalanx of the right index finger, for the purpose of anchoring or holding it.

3. Bring the floss over the end of the right thumb which is also held against the finger around which the floss is anchored.

4. Grasp the floss with the left hand and bring it over the end of the first finger of that hand. Thus a length of floss, about 1 inch long, is held between the thumb of the right hand and the first finger of the left hand. (Fig. 25-1.)

5. Now with the thumb inside of the cheek and the finger inside of mouth, the floss is carried to the very bottom of the gingival crevice back of the last right upper tooth, drawn slightly endways through the crevice and crossways outward across the distal surface so as to

scrape off and dislodge the soft bacterial material on the tooth within the crevice and outwards.

6. Holding the floss in the same way, pass it into the next interproximal space. Carry it to the bottom of the posterior

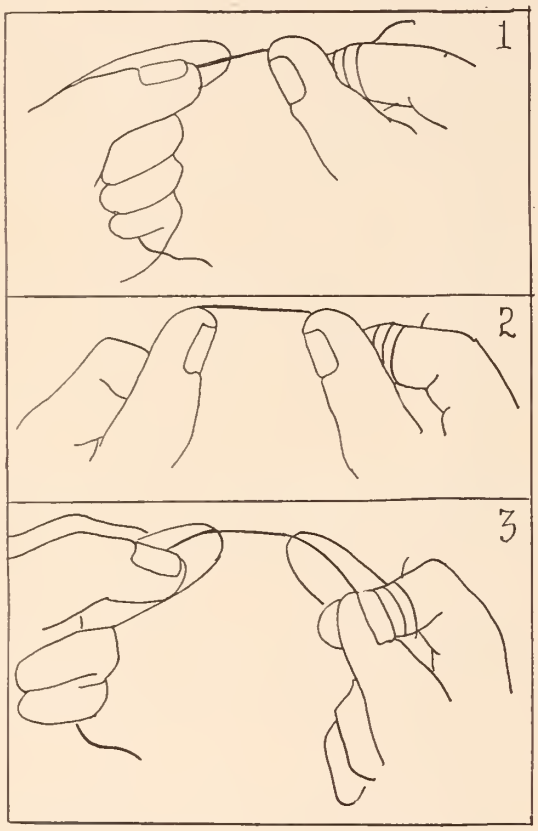


Fig. 25: Good way to hold dental floss in cleaning the teeth. For upper right 1, upper left, 2, lowers 3. See text for details.

gingival crevice and clean the mesial surface of that tooth. Now, before withdrawing the floss from this interproximal space, clean the distal surface of the other tooth in the same way. Then withdraw the floss and move on to the next interproximal space, etc., until the proximal surfaces of all teeth have been cleaned.

7. In passing the floss between contacting teeth it is not forced directly in and out. It should be held over the contact and drawn gently and slightly back and forth endways. This allows the low-twist, unwaxed floss to flatten and pass between the contacting teeth with the greatest ease.

8. After cleaning 2 or 3 teeth the part of the floss used is somewhat soiled and loaded with bacterial material. It is desirable to move along the string to a new place by taking another turn around the anchoring finger. This should be repeated from time to time as needed.

9. The floss is held and manipulated with the same fingers as indicated above until after the surfaces of the teeth in the interproximal space between the left central and lateral have been cleaned.

10. In cleaning the rest of the upper teeth, it will now be found more convenient and practical to hold the floss over the ends of the thumb of the right hand as before and over the thumb (instead of the index finger) of the left hand (Fig. 25—2).

11. All the lower teeth now should be cleaned in the same way. Most people will find that they can carry out the necessary manipulations most successfully with the floss held over the ends of the middle finger of each hand instead of the thumbs or the thumb and first finger as in cleaning the upper teeth. (Fig. 25-3)

12. After cleaning all the teeth with dental floss, the mouth should be thoroughly rinsed by forcing water vigorously back and forth between the teeth in order to remove material that has been loosened or dislodged but not removed by the floss. After a little experience one can clean all his teeth well with dental floss in from two to three minutes.

13. It gives a pleasurable sensation of cleanliness to hastily brush the teeth again after cleaning them with dental floss. But this is not essential.

Since practically all adults and many others have active periodontoclasia lesions of various extent around part or all of their teeth, there will be more or less bleeding of their inflamed gums when they first begin cleaning their teeth with dental floss. This soon ceases and the previously inflamed tissue rapidly heals. No bleeding or discomfort is experienced from any reasonable manipulations of the floss in the future. One soon realizes

that his teeth are cleaner than they have ever been before.

DISCUSSION AND COMMENT

Although the method of personal oral hygiene herein described has been perfected and some of the information upon which it is based has been established or clarified during the past few years, actually the fundamental ideas as to the cause of these diseases of the teeth and gums, and quite similar effective means of preventing them, were known and taught almost one hundred and thirty-five years ago. If the method then known could have been available and followed generally since that time, countless millions of people would have avoided untold disease, impairment, and final loss of some or all of their teeth; and the resulting disfigurement, discomfort, and other unhappy consequences.

In the Charles Edmond Kells Collection in the Rudolph Matas Medical Library at Tulane University, there is a 200 page booklet [81] entitled "A Practical Guide to the Management of the Teeth, Comprising a Discovery of the Origin of Caries or Decay of the Teeth with its Prevention and Cure," written by Levi Spear Parmly ("Dental Professor") and published in 1819. No doubt copies of this book can be found in other collections and in other libraries. Anyone claiming that our present conception of the cause and prevention of the diseases of the teeth — caries and periodontoclasia — is new, owes it to himself to read this treatise.

Parmly recognized and asserted, without reservation, that these diseases of the teeth and gums are caused entirely by local conditions of uncleanliness and that they can be prevented only by cleaning the teeth effectively. Up to this time most authorities considered that caries originated within the tooth and that gum disease was due to systemic conditions. If not the first, Parmly was certainly one of the first, to claim that local uncleanliness is the essential cause of decay of the teeth and to devise an effective method of cleaning them for prevention of the disease. He was enthusiastic about his "discovery" and asserted that "if the teeth and gums are regularly cleaned with the dentifric apparatus recommended by the author, no caries can possibly take place." "*** the interstices and irregularities of the teeth afford a lodgment for whatever is taken into the mouth, and no contrivance *hitherto discovered* can, from these parts, remove the accumulations."

Parmly came to New Orleans in 1824, taught his methods and gave several lectures on care of the teeth. He was from England where he was celebrated for his knowledge and methods. He also practiced and lectured in this country, in New York, Savannah, and Charleston, in addition to New Orleans. Copies of these lectures in our library present ideas and methods advocated by him at that time with which, with only slight improvement and modernization, our present information and methods entirely coincide. His "dentifric apparatus" consisted of three parts. Although there is no exact description of them, there is general information as to what they were and how they were to be used. "The first part to be used is the brush. It is made hollow in the middle to embrace every part of the teeth except the interstices; and thus, at one operation, the top (a part hitherto entirely neglected), the outer and inner surfaces are completely freed from all extraneous matter. The second part is the polisher for removing roughness, stains, etc., from the enamel and restoring the teeth to their natural smoothness and color." I do not find any description of the polisher.

"The third part is the waxed silken thread which, though simple, is the most important. It is to be passed through the interstices of the teeth, between their necks and the arches of the gums, to dislodge that irritating matter which no brush can remove, and which is the real source of disease. With this apparatus, thus regularly and daily used, the teeth and gums are preserved from disease."

In describing his method of cleaning the teeth with his "untwisted waxed silk" floss, he says "although the gums may first become subject to slight bleeding, yet in a few days, by perserverance in the treatment recommended, this bleeding will soon cease." Persons subject to inflammation of the gums "should clean them often with the waxed silk; when a new and healthy action will be communicated to the gums and they will be restored, in a short time, to their naturally firm and adhesive state."

Some of his other statements are especially interesting. "The first and most important object is cleanliness of the mouth, which is the only preventive of disease." "Where the teeth are kept clean and free from such objectionable matter." (relics of food undergoing putrefaction) "no disease will ever arise. This being the case, the means of prevention are clear and simple; and it is in the mode of cleaning them, that the whole secret of avoiding disease consists." This can be done only "in a proper manner, by using the dentifric apparatus described."

Disease of the teeth is "the effect of carelessness, inattention, or other want of cleanliness. It is in the power, therefore, of every individual to preserve the teeth and gums in perfect health." The advice relative to children's teeth, which he gave then, is quite applicable today. "In childhood the mouth should be cleaned every evening. The relics of food, which have been all the day accumulating, are thus prevented from committing their ravages during the night; and the habit of cleanliness will become fixed, from being so essentially connected with personal comfort." "When the permanent teeth begin to make their appearance, then is the time that the greatest attention to cleanliness is particularly necessary."

In the light of our present knowledge as to the essential etiological conditions in periodontoclasia, it is evident that no method of personal oral hygiene could be effective in preventing it, without the proper use of dental floss. Throughout the literature during the present century, many authors mention the use of floss silk or "flossing" as a part of the home care of the teeth. In most instances methods of using it suggested or implied could not be effective because they do not include cleaning the tooth within the gingival crevice. Joseph Head,[82] in 1917, described his method of "floss-silking" the teeth which evidently did include application of the floss to some extent within the crevice. He says the silk should go "up well under the frenum of the gum ***across the gum and up into the opposite frenum." His statement that "the gums at first naturally bleed" further indicates that the method he advocated included carrying the floss into the crevice.

Proper use of dental floss is necessary for maintenance of both oral cleanliness and dental health. Whatever advocacy and promotion there may have been of this necessary part of personal oral hygiene, it remains a fact that, as yet, very few people use dental floss. Out of more than 900 people—mostly university personnel and dentists and dental students —whom I have examined during the past several years, less than half a dozen were using the available dental floss effectively and thereby maintaining a high degree of oral cleanliness and dental health. Some others used it irregularly and ineffectively.

During recent years there has been a wave of promotion of the idea that the teeth must be brushed soon after each meal. It is based upon the observation by Stephan and others[83-87] that the application of sugar solutions to accumulated dental plaque material ("materia alba") is quickly followed by marked increase in acidity.

Fosdick[88] and a group of cooperating investigators carried out a large clinical experiment to ascertain the effect upon caries incidence, of brushing the teeth within 10 minutes after each ingestion of food or sweets. The brushing was to be followed by thorough rinsing of the

mouth. The controls followed their usual procedure which "generally consisted of brushing their teeth night and morning."

The results over a one or two year period indicate that the incidence of caries is reduced between 50 and 60 per cent by brushing (and/or rinsing) the teeth right after ingesting food or sweets. Both test subjects and controls had a considerable increment of caries lesions during the experimental period. The implication is that these were new lesions which were not present at the beginning. Any method of personal oral hygiene which allows the development of any new caries lesions, is inadequate.

It has long been well known that when fermentable carbohydrates are applied to a mass or accumulation of acidogenic bacteria, acids are produced quickly. If on the other hand, culture media containing the same fermentable carbohydrate is, inoculated with a relatively small number of such acidogenic bacteria, it requires hours of incubation and multiplication before significant amounts of acids are produced. This is common practice in bacteriology in testing acid and gas production of organisms.

In carrying out the experiments to test acid production of plaque material in situ, or to collect a sufficient amount for tests outside of the mouth, it is necessary for the subject to refrain from cleaning the teeth for some time, usually three or four days, to allow time for accumulation of sufficient suitable material for the purpose. How different these conditions are from those that exist when the teeth are properly cleaned of food and bacterial material with both toothbrush and dental floss every night before retiring! When this is done there is not time for harmful amounts to grow and accumulate during the following day before time to clean them the next night; or for sufficient amount for testing purposes either.

Advocating and promoting brushing the teeth after every ingestion of food, for the purpose of lessening caries incidence, encourages the misbelief that caries is the main disease of the teeth (periodontoclasia is the most important for adults), that the teeth can be effectively cleaned with the brush (which they cannot), and it tends to detract attention from the importance and application of the essential information that the teeth must be cleaned with both toothbrush and dental floss every night before retiring.

The oral hygiene (oral cleanliness) habits of different individuals vary greatly, as do the other habits of personal cleanliness. These are acquired in the home. During early childhood the child must learn by experience and the example of others that preparation for retiring at night must include thorough cleaning of the teeth. It should be an established practice in the home that no one may retire with an unclean mouth.

The young child cannot clean his teeth effectively; therefore, it must be done for him by the parent, who must know how to do it. During the first several years, use of the floss is not necessary. The teeth can be cleaned with the brush well enough to prevent caries, if it is done right. The most important part for the child is cleaning the occlusal surfaces of all the chewing teeth by firm application of the bristles to these locations, since almost all cavities in childhood originate on the occlusal surfaces of the grinders.

After a child is several years of age and the permanent teeth are in place, then it is important that the teeth should not only be cleaned with the brush, but that dental floss should be passed (in and out) between contacting permanent teeth, so as to insure against proximal caries activity. At some age, usually between 6 and 10, the child who has been well trained can take over his own oral hygiene procedure, at first under supervision and finally without.

At the present time most children have already sustained caries damage to some or several of their teeth, especially the grinders, by the time they are 12 to 15 years of age. This is entirely preventable and the parents have full responsibility

for it. The responsibility cannot be placed upon the child or others. For a child to develop even one caries lesion is a reflection of neglect and deficient or uninformed guidance in this regard.

In general, as each person advances in age, there is a constantly increasing accumulation of dental disease and injury. Although such damage as has already occurred at any given time, cannot be prevented now, for all practical purposes, and except for some special circumstances, any person can begin at any age and, by the right method of personal oral hygiene herein described, prevent the occurrence of any new caries or periodontoclasia lesion during the remainder of life. The oldest person the author has had under close observation is now 78. For years he has been able, by this method, to maintain the maximum degree of oral cleanliness and dental health.

People depend upon practicing dentists for information and advice relative to dental health. The knowledge, ideas, and methods of dentists are acquired largely through their training in the dental school. Up to the present time, the fundamental facts upon which this method of preventing the diseases of the teeth is based and the method itself, have been taught, and that in a restricted or limited way, in only two of the dental schools of the country, Loyola in New Orleans and University of Texas in Houston. Short course intensive postgraduate instruction has also been given to small numbers of dentists, who then return and enthusiastically teach the method to their patients.

It should be understood that this is not just another method of personal oral hygiene to try on patients. The dentist who understands and knows of his own knowledge (not the opinions of others) the basic facts relative to the local etiological and pathological conditions in these diseases, already knows in advance that this method would be necessary to prevent them. He would be following the method himself. Until he does, he is not prepared to teach it to his patients.

SUMMARY

Attention has been directed to the essential local etiological conditions in caries and in periodontoclasia. The lesions of these diseases are caused, and their advancement is promoted, by uncleanliness at vulnerable locations on the teeth which are not naturally kept clean.

A limited number of illustrations have been included to visualize some of the ideas in the text. Reference is given to a larger number in the literature confirming the etiological conditions at the locations where the lesions of caries and periodontoclasia originate and advance.

Caries activity, and to a large extent, periodontoclasia activity, occur at night during quiet and sleep. To prevent them the teeth must be thoroughly cleaned at night before retiring, thereby securing a long period during which there is no food material about the teeth to ferment or decompose, and relatively little growth of harmful bacteria takes place.

The teeth can be effectively cleaned at the important locations only by the proper application of the bristles of an appropriate toothbrush and the filaments of the right kind of dental floss. Details of the method are given. These differ from, and in some particulars are the opposite of, those usually followed.

To maintain a high degree of oral cleanliness, and to prevent caries and periodontoclasia, *the teeth must be cleaned right, with the right kind of both toothbrush and dental floss, every night before retiring.*

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REPORT OF THE COMMISSION ON FINANCING OF HOSPITAL CARE

A Commission on financing of hospital care was sponsored by the American Hospital Association as an independent nongovernmental agency. It has functioned over a two year period and has rendered a report in January 1954. A total of $556,000 was contributed by several organizations to the Commission, containing 34 persons, who set out "to study the costs of providing adequate hospital services and to determine the best systems of payment for such services." There were 14 physicians among the 34 making up the Commission, and probably one fourth of these physicians could be considered as being in active practice. The recommendations have been made public. Three volumes of the Commission's findings are to be published in the spring and summer of this year.

The Commission has addressed itself to such questions as the following:

How much of the increased cost of hospitalization is due to expanded service?

How much is due to higher cost of labor and materials?

By what means may cost of care to the public be held to a minimum without impairing quality of service?

The Commission stated as its initial principle that "necessary hospital care should be available to all persons in the community, without regard to their ability to purchase it." The summary report contained recommendations in three areas of study: (1) voluntary prepayment for hospital care, (2) financing hospital care for the nonwage and low income groups, and (3) the costs of hospital care.

The Commission found—in a conclusion with which most doctors would agree—that voluntary prepayment for hospital care "greatly eases the burden of financing hospital care by making it possible to meet the costs through advanced periodic payments of known amounts." The result "is to reduce significantly the number of persons unable to pay for their care at the time of the illness and the number for whom the community, through private or tax funds, must assume financial responsibility." In other words, the machinery of voluntary prepayment stimulates methodical saving, provides a fund, and distributes the burden of illness.

The Commission emphasized the observation that funds paid to voluntary prepayment plans are "a public trust," and "methods to assure economy and maximum effectiveness in their use are a joint obligation of hospitals, physicians, prepayment agencies, and the general public." The Commission recommended certain measures to make the prepayment costs

as low as possible. These include the usual ones of eliminating unnecessary admissions, the prompt discharge of patients as early as medical needs have been met, and curtailment of unnecessary use of hospital beds for diagnostic and other services, which could be given on an ambulatory basis. The practicing physician, however, will recognize that the decision as to what is an ambulatory and what is a hospital patient is often influenced by factors not under his control, such as the emotional attitude of the individual, the availability of diagnostic procedures on an ambulatory basis, and the physical stamina of the individual.

The Commission appeared to feel that public interest in prepayment plans would be increased by greater uniformity and simplicity of contract, in which the coverage for essentials is clearly delineated. In the field of nonwage and low income groups, such as the aged, the unemployed, the disabled, and public aid recipients, the Commission found that agencies for financing hospital care in most communities were insufficient. In many communities, provisions were nonexistent. They stated that creative and imaginative approaches to the problem of financing and administration must be developed.

Several methods for extension of voluntary prepayment protection into periods of unemployment were recommended. It was felt that this could be done by voluntary action with prepayment plans and with employer cooperation, such as inclusion of prepayment costs in the unemployment compensation program.

Recommendation was made for the coverage of retired employees. Another proposal was the inclusion of a provision for hospitalization in the Federal Old Age and Survivors Insurance program for needy beneficiaries receiving monthly income maintenance benefits under this program. However, it did put in the proviso that such hospital benefits for OASI beneficiaries be the responsibility of state and local agencies and that protection be purchased from the voluntary prepayment plans or by payments directly to hospitals.

The inclusion of hospitalization under the various phases of the federal insurance program should be recognized by students of the state medicine problem as a frequently recurring proposal. Although certain comments in the public press stated that only by a semantic distortion could this be construed as socialized medicine, it is well known that such plans slide imperceptibly into compulsory prepayment insurance and then into full scale state medicine. The same comments and dangers would apply to various other proposals that governmental funds be used for experimentation in developing methods for improving the financing of hospital care for individuals in the low income group, such as those not on relief but not adequately self sustaining.

In the area of costs of hospital care, the Commission made extensive recommendations, which, in substance, have to do with obtaining increased efficiency of administration, the encouragement of philanthropy, the education of the public in hospital economics, and the inclusion of out-patient hospital services in prepayment plans. The inclusion of this latter provision is one with which many practicing physicians will take issue. If put into operation this plan would be another step in the direction of "hospital practice of medicine," the ultimate effect of which would be to shift the unit of practice from the individual physician to that of a corporation, in this case—the hospital. It is recognized, of course, that such provisions are an established part of tax supported and of certain teaching hospitals. If, however, these practices were extended to the voluntary hospitals their effect on the general practice of medicine would soon be evident.

The Commission subjected hospital costs to certain statistical analyses. It found that if the value of the dollar had remained unchanged from 1935 to 1952, the increase in total expenditures of all non-Federal general hospitals would have been only 199 per cent. Analyzing further, it

was stated that if the population had remained the same, the increase in total expenditures, after adjustment for inflation, would have been 148 per cent. It was further calculated that the costs per admission, after adjustment for inflation, have risen only 20 per cent.

Considering the recommendations of the Commission as a whole, in the three areas of study mentioned above, the medical profession can agree on the support of voluntary prepayment insurance plans, and also, agree on their extension under certain conditions. The provisions recommended for inclusion of a large section of the community under the welfare program with tax support bring us dangerously close to state medicine. The mere fact that hospital care was being provided by a voluntary agency in a free enterprise institution would not lighten the ultimate threat of governmental control.

The report as a whole is a valuable contribution in the field of thought on the problem of financing of hospital care.

CONFERENCE ON THE ADOLESCENT RETARDED CHILD

On April 9 and 10, a two day conference will be held in New Orleans, at the Jung Hotel, on *The Adolescent Retarded Child.* This conference is being arranged by the Woods Schools of Langhorne, Pennsylvania, and includes four papers and an extended panel discussion to be covered in three sessions.

Emphasis is being placed on problems of social rehabilitation and occupational placement. The type of program is such that it will be of great interest to physicians dealing with children, and also, to psychiatrists.

The sponsors of the Conference are anxious to have as many physicians as are interested to attend.

ORGANIZATION SECTION

The Executive Committee dedicates this section to the members of the Louisiana State Medical Society, feeling that a proper discussion of salient issues will contribute to the understanding and fortification of our Society.

An informed profession should be a wise one.

A. M. A. PRESIDENT URGES INTEREST IN PROBLEMS OF OTHER FELLOW

An interest in the problems of the other fellow for a better understanding among business, industry and the professions was urged by Dr. Edward J. McCormick, Toledo, president of the American Medical Association.

"One of the chief afflictions among professional and business men in our complex society today is lack of interest in what the other fellow is doing," Dr. McCormick wrote in the current (February 27) Journal of the American Medical Association. "As our technological progress grows, it becomes increasingly difficult to keep a broad perspective of what is going on, and the tendency to specialization grows stronger.

"The day of the plant superintendent who was able to boast that he could perform every one of the jobs in his shop with equal skill is rapidly vanishing. The business executive who could describe every intricate detail of his enterprise is becoming rare. And the family doctor once thought suitably equipped to handle almost any kind of ailment finds increasing need for consultation with specialists.

"With each passing year there is an ever-higher rate of skilled personnel crawling into hard shells of specialization that prevent over-all contact with their industrial and professional neighbors. Worse yet, these persons become divorced from all community activity. Yet the need is great for a better understanding among business, industry and the professions. In turn these segments of our economy owe

much to the communities in which they prosper, and persons owe to each other the obligation to be good neighbors."

Dr. McCormick stressed that if the medical profession is to continue serving the public effectively, it must seek out the facts on what the public wants. Getting together with representatives outside the medical profession is one way of doing this, he stated, adding:

"It is my sincere belief that local medical societies should encourage each individual member to participate in some civic undertaking. We physicians should be rendering health leadership in all service clubs, chambers of commerce, fraternal and veterans organizations, PTA groups, church associations, and unions.

"We cannot expect these organizations to be interested in our problems if we are not interested in theirs. Doctors should rub elbows on a social and organizational basis with persons outside the profession. There is much good to be gained in taking the time to learn the trouble of the other fellow. A diet limited to one-track ideas can lead only to social anemia."

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REPORT OF CONGRESS ON MEDICAL EDUCATION AND LICENSURE

Licensure and medical care problems created by the heavy influx of foreign-trained doctors commanded a great deal of attention at the 50th annual Congress on Medical Education and Licensure held in Chicago, February 7-9.

The three-day meeting attracted an unexpectedly heavy attendance of more than 600 medical educators and licensing and specialty board officials. The Congress was sponsored by the American Medical Association's Council on Medical Education and Hospitals, the Federation of State Medical Boards of the United States and the Advisory Board for Medical Specialties.

"The infiltration of the medical profession of the United States by large numbers of doctors who have not been able to obtain a proper basic professional education is almost certain to lower the general level of practice in this country," Dr. Willard C. Rappleye, New York, Dean of Columbia University College of Physicians and Surgeons, told the meeting.

"The numbers coming in are so large that they cannot readily be absorbed without that effect."

Dr. Rappleye pointed out that the United States government, in fostering international good will, is admitting large numbers of displaced persons, including physicians about whose professional ability no questions are asked. More will be admitted by recent legislation which permits the entrance of several hundred thousands of immigrants above previous quotas, he said.

He added that unless this situation is met "with courage and the conviction that we shall not surrender the results of 40 years of effort in raising the standards of medical licensure, practice and education," we may revert to conditions resembling those of 50 years ago.

Dr. Stiles D. Ezell, Albany, secretary of the New York Board of Medical Examiners, also called attention to the inadequacy of the medical training of most of the foreign doctors seeking to practice in the United States.

Dr. Ezell said that except for Great Britain and the Scandinavian countries the last war brought destruction and degeneration to European medical education.

"Even before the elimination of the last of the unapproved medical schools in this country, there had begun a migration of physicians to this country which has now reached a total of more than 20,000," he stated. "The challenge in this fact is that the profession has not been prepared to understand what is involved in such a massive movement, nor has it realized the numerous deficiencies involved in the collective educational background of this group."

He pointed out that large numbers of foreign graduates have completed specialized training without any consideration of the deficiencies in their basic medical training or their eligibility for licensure.

Dr. Edward L. Turner, Chicago, secre-

tary of the Council on Medical Education and Hospitals, recommended the adoption of a uniform plan for screening the professional competence of foreign-trained doctors.

Such a uniform procedure, Dr. Turner said, would be of greater assistance to state medical licensing boards than the present attempts to evaluate and list foreign medical schools. He pointed out that there are problems and difficulties in evaluating foreign medical schools which are "almost insurmountable."

Dr. Edward J. McCormick, Toledo, president of the A. M. A., told the meeting that it was the responsibility of medical educators to instill a proper sense of moral values into the minds of medical students.

"Whether this is done by adding courses in ethics and moral principles to the curriculum, or through the medium of after-hours discussion groups, is a problem for the deans of medical schools to decide," Dr. McCormick said. "But, I am convinced that some concerted effort in this direction needs to be made."

He also expressed the opinion that a liberal arts background should be included in the pre-medical training of young doctors.

The financing of medical education was touched upon by two speakers. William C. Stolk, New York, president of the American Can Company and a trustee of the National Fund for Medical Education, reported that management is becoming alert to the vital significance of the 79 medical schools. Mr. Stolk said that business is accepting increased responsibility in helping to maintain high health standards and it realizes that financially solvent medical schools are a necessity.

Dr. Louis H. Bauer, New York, president of the American Medical Education Foundation, said that physicians contributed $1,090,771 to the foundation in 1953, passing the million dollar mark for the first time. The 1954 goal was set at $2,000,000. There were 17,809 individual contributions last year, an increase of 149 per cent over 1952, Dr. Bauer reported.

Dr. H. G. Weiskotten, Skaneateles, N. Y., chairman of the Council on Medical Education and Hospitals, reviewed the 50 years' history of the Council. Dr. Weiskotten cited the progress in medical education and said that a new era was being entered—experimentation in undergraduate, graduate and postgraduate training of physicians without losing any of the gains already made.

A fast-growing interest in postgraduate education was reported by Dr. Douglas D. Vollan, Chicago, a staff member of the Council on Medical Education and Hospitals. Presenting a preliminary report of a survey of postgraduate education by the Council, Dr. Vollan said that responses from about 5,000 physicians out of 17,000 chosen at random indicated that they spent an average of 83.3 eight-hour days a year in keeping themselves up to date.

The methods used are (1) medical reading, (2) professional contacts with colleagues in consultations or other means, (3) hospital staff meetings, (4) attendance and participation in medical society meetings, and (5) postgraduate courses.

Speaking on medical legislation, Dr. John N. McCann, Youngstown, O., retiring president of the Federation of State Medical Boards of the United States, said physicians must be brought to realize that a basic license to practice issued by a responsible state board is the sole guarantee of legal practice, not the examination given by a specialty board.

Dr. Frank B. Berry, Washington, assistant secretary of defense (health and medical), reported that the armed services need about twice as many medical officers as they now have, and that they hope to persuade graduates to take up such service as a career. Dr. Berry also said that "the chances are that from August to October, 1954, there will be a considerable number of doctors called into the armed services."

A panel on professional orientation brought out general agreement that most medical school graduates enter active practice with inadequate preparation and

training in ethics, medical economics, doctor-patient relationships and social problems. Medical schools have the primary responsibility of providing such teaching, the panel members concluded, but they should have the help of medical societies and physicians in active practice.

Medical education should be regarded as a continuing process which lasts throughout a physician's professional career, rather than as something which is completed when a doctor receives his M. D. degree and his license to practice, it was stressed throughout a panel discussion on postgraduate medical education. Two problems which received special emphasis were how to reach physicians in small towns remote from medical centers and how to stimulate those who have no desire to leave their practice for postgraduate courses.

Medical societies have a definite responsibility to sponsor and advance postgraduate education in order to improve the caliber of medical service to the public, it was emphasized by one panel member. Another urged that teachers of postgraduate courses should have adequate previous experience to appreciate the needs of active practitioners. A third participant suggested that there is a rich area for experimentation in the field of home-study courses. There was general agreement on the need and value of participative courses which enable postgraduate students to work closely with teachers and patients in the demonstration of clinical problems.

The distribution of physicians in the United States is extraordinarily good, according to Frank G. Dickinson, Ph. D., Chicago, director of the A. M. A. Bureau of Medical Economic Research, who made a preliminary report of a seven-year survey based on a division of the country into 757 trading areas.

Dr. Dickinson reported that every town with a population of more than 5,000 had at least one physician in active practice, as had 96 per cent of those with a population between 2,500 and 5,000; 88.3 per cent of those with a population of between 1,000 and 2,500, and 21 per cent of those with a population between 100 and 1,000. More than half of the latter group had less than 250 inhabitants. Only one-sixth of one per cent of the population lived outside a 25-mile radius of the closest town with a physician in active practice, he said.

State medical practice acts show a wide variance, it was reported by George E. Hall, Chicago, staff associate of the A. M. A.'s Bureau of Legal Medicine and Legislation. Differences exist, Mr. Hall said, in such matters as the method of appointment of licensing boards, the membership of such agencies, the type of examinations, the requirements of professional skill, the reasons for revoking of licenses, the exemptions from the acts, and reciprocity.

"Lack of uniformity in the medical practice acts is nothing new," he pointed out. "Few people realize the extent because these laws have been so ably administered that a large measure of practical uniformity has actually been achieved."

Nevertheless, he urged, efforts should be made to obtain uniformity in the laws.

A committee headed by Dr. Bruce Underwood, Louisville, secretary of the Kentucky State Board of Health, suggested that a uniform Medical Practice Act be developed and be submitted next year.

The relationship of hospital internship to licensure was described by Dr. S. Howard Armstrong, Chicago, director of medical education at the Cook County Hospital. Aura E. Severinghaus, Ph. D., New York, associate dean of Columbia University College of Physicians and Surgeons, presented highlights of a survey on preprofessional education.

Dr. George W. Covey, Lincoln, Neb., a former member of the Nebraska Board of Medical Examiners, reviewed recent developments involving a possible recognition of osteopathy and concluded that the practice was still a cult.

The president of the Advisory Board for Medical Specialties, Dr. Robert A. Moore, St. Louis, called upon specialty boards to

assume a greater leadership in the improvement of medical practice.

Dr. John C. Leonard, Hartford, Conn., director of medical education at the Hartford Hospital, said nonuniversity hospitals must be kept abreast of medical developments. Dr. Leonard urged the maintenance of a sound program of graduate training

A new test technique to make the oral or practical licensure examination more objective and more easily analyzed was recommended by John T. Cowles, Ph. D., Princeton, N. J., of the Educational Testing Service. Dr. Cowles said effort has been focused almost exclusively upon the improvement of the written examination, to the detriment of the oral and practical tests.

Dr. Ford K. Hick, Chicago, professor of medicine at the University of Illinois College of Medicine, presented the problems of specialty training in nonuniversity hospitals.

Dr. Turner reported that the Council on Medical Education and Hospitals and the executive council of the Association of American Medical Colleges have compiled a list of 39 foreign schools which provide basic medical education on a par with that of approved schools in the United States, but said there are more than 550 medical schools in the world.

He said that while the council has endeavored to indicate that the absence of a school from this current listing does not indicate either approval or disapproval, but means primarily lack of adequate information, the absence of listing frequently serves to deny a graduate the right to examination before a state board.

"It seems advisable that there should be a careful analysis of state medical practice acts with serious consideration being given to the cooperative development of some commonly acceptable yardstick or screening mechanism to evaluate competence of the foreign graduate," Dr. Turner stated.

He suggested that the National Board of Medical Examiners could become a highly effective aid to state boards in determining whether foreign-trained physicians were eligible for further state board consideration for licensure. The National Board, at the request of the state board, could conduct the examination for professional competency, and the state board could then determine if the candidate met other requirements for licensure, he added.

We do not agree with Dr. Turner in his claim that the National Board of Medical Examiners could become a highly effective aid to State examining boards in the evaluation of foreign-trained physicians for eligibility and further consideration by State Boards for licensing these foreign-born and wholly inadequately trained medical applicants who are trying to force themselves on our people. This National Board could be responsible, in our opinion, for certification of inadequately trained and poorly qualified physicians by the very nature of their examinations and methods of certification.

Why, then, should the respective State examining boards accept these men recommended by the National Examining Board without examination by the State Board? Licensing physicians to practice in our State is the responsibility of the State Board of Medical Examiners, and the citizens of our State and the legislators who placed this responsibility on our Board look to them for protection of our people so far as good medicine is concerned. If they fail in this duty entrusted to them, the National Examining Board would not be held accountable, for certification of incompetent applicants, but the members of the Louisiana State Board of Medical Examiners will be answerable for their deficiencies in carrying out the mandates of the people to furnish our citizens with qualified physicians, who can and will furnish them with good medical care. Our Board is composed of well qualified practicing physicians, who have been in active practive in our State for many years and know the needs of our citizens and have a personal interest and pride in seeing that they get good medical care. The members of the National Board, do

not and can not enjoy this keen interest in the welfare of our people, and are not held accountable to the home people for the proper execution of a legislative act describing their duties and responsibilities. We believe in states rights and do not feel that any national board of medical examiners should supersede the duly and legally delegated State Boards. Woe be the day, when such a situation, rules in our State.

At the annual meeting of the Federation of State Medical Boards, Dr. Elmer W. Schnoor, Grand Rapids, Mich., was installed as president to succeed Dr. McCann. Dr. M. H. Crabb, Fort Worth, was elected president-elect; Dr. K. D. Graves, Roanoke, Va., vice-president, and Dr. Walter L. Bierring, Des Moines, secretary-treasurer for the 40th year.

The executive committee chosen consists of Dr. McCann; Dr. Joseph J. Combs, Raleigh, N. C.; Dr. C. J. Glaspel, Grafton, N. D., and Dr. Gerald D. Murphy, Jr., El Dorado, Ark.

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MEDICAL NEWS SECTION

CALENDAR

PARISH AND DISTRICT MEDICAL SOCIETY MEETINGS

Society	Date	Place
East Baton Rouge	Second Tuesday of every month	Baton Rouge
Morehouse	Third Thursday of every month	Bastrop
Natchitoches	Second Tuesday of every month	
Orleans	Second Monday of every month	New Orleans
Ouachita	First Thursday of every month	Monroe
Rapides	First Monday of every month	Alexandria
Sabine	First Wednesday of every month	
Second District	Third Thursday of every month	
Shreveport	First Tuesday of every month	Shreveport
Vernon	First Thursday of every month	

MEETINGS

CHILD RESEARCH CLINIC OF THE WOODS SCHOOLS

The Woods Schools of Langhorne, Pennsylvania, will hold the 1954 Spring Conference of the Child Research Clinic, in three sessions, at New Orleans, April 9 and 10, on "The Adolescent Exceptional Child, a Realistic Approach to Treatment and Training." The first session will be on Friday, April 9, at 8:00 P. M. in Hutchinson Memorial auditorium. The second and third will be held in the Tulane Room of the Jung Hotel from 10:00 to 12:00 in the morning and from 2:00 to 4:00 in the afternoon.

Further details may be obtained from Mr. Richard Roley, The Woods Schools, Langhorne, Pennsylvania.

INTERNATIONAL ACADEMY OF PROCTOLOGY

All physicians are cordially invited to attend the Sixth Annual Convention of the International Academy of Proctology to be held at the Palmer House, Chicago, Illinois, April 8, 9, 10 and 11th, 1954.

An extensive Motion Picture Seminar of Proctologic Surgery (including office techniques) will be held on April 11th, 1954. All scientific papers will present the latest developments in proctology and gastroenterology.

Because general practitioners, as well as gastroenterologists and proctologists, face proctologic problems in their daily practice, much of the program has been planned to answer their questions.

There is no fee for attendance at the Annual Convention of the International Academy of Proctology. These Conventions, as well as all other activities of the Academy, are directed toward the further development of proctology. All physicians interested in proctology are therefore invited and welcomed to the Annual Meeting.

The program will be available in the near future, upon request to the Executive Office of the International Academy of Proctology, 43-55 Kissena Boulevard, Flushing, New York.

AMERICAN GOITER ASSOCIATION

The 1954 meeting of the American Goiter Association will be held at the Somerset Hotel, Boston, Massachusetts, April 29, 30 and May 1. The program for the three day meeting will consist of papers and discussions dealing with the physiology and diseases of the thyroid gland.

AMERICAN GERIATRICS SOCIETY

The American Geriatrics Society will hold its

11th annual meeting, June 17-19, 1954, at the Fairmont Hotel in San Francisco, just preceding the meeting of the American Medical Association. Hotel reservations should be made through the San Francisco Convention and Visitors Bureau, 200 Civic Auditorium, San Francisco 2. Members should reserve accommodations immediately, stating time of arrival and departure date, because the hotels expect to be filled to capacity.

AMERICAN SOCIETY OF MEDICAL TECHNOLOGISTS

The 22nd annual national convention of the American Society of Medical Technologists will be held at Miami Beach, Florida, June 13-17, 1954. The co-headquarters hotels are the Delano and DiLido. For further information, contact Co-chairman, Publicity Committee, Jackson Memorial Hospital, Miami, Florida.

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FREE-LOAN MEDICAL FILMS

A select list of Medical films available only to professional audiences may now be obtained free of charge upon request directed to The Princeton Film Center, Inc., Princeton, N. J. All films listed are 16mm (some silent—some sound)—many in color—including such useful subjects as "FRACTURES: AN INTRODUCTION" and "ANOMALIES OF THE BILE DUCTS."

These films are designed for use before student groups as well as by more advanced audiences in the medical profession.

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SURGICAL APPLIANCE TECHNICIAN'S HANDBOOK

Around March 1, 1954, Dr. Howard L. Boyland will release the first edition of THE SURGICAL APPLIANCE TECHNICIAN'S HANDBOOK.

Dr. Boyland is the medical director for Surgical Appliance Industries, Inc., of Cincinnati, Ohio, whose president, Mr. William Pease, and vice-president, Mr. I. M. Pease, have for many years felt the need of such a handbook for the Surgical Appliance trade. Though these executives of the company have been largely instrumental in having the book published, they have insisted that no commercial references be made to their own specific lines. Each dealer and fitter will find this book extremely helpful no matter whose line of surgical appliances he carries.

This handbook actually is the first comprehensive work to be published in the surgical appliance field in more than forty years. In fact, no such textbook and reference guide has ever been available to the surgical appliance dealer or fitter.

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WOMAN'S AUXILIARY TO THE LOUISIANA STATE MEDICAL SOCIETY

STATE NEWS

Woman's Auxiliary to the Louisiana State Medical Society had their midwinter meeting and luncheon at the Orleans Club. Mrs. Edwin A. Socola presided. Mrs. H. Theodore Simon was chairman in charge of arrangements. Reports were made by attending parish presidents and representatives, and committee chairmen. Among those attending were Mmes. C. Grenes Cole, George Taquino, Louis Leggio, Jules Myron Davidson, Edwin Guidry, John Tanner, George Haik, George D. Feldner, John S. Dunn, Daniel J. Murphy, Monte Meyer, Robert E. Rougelot, Jr., Albert Habeeb, and Paul Lacroix all of New Orleans; Mmes. Arthur J. Herold, Whitney Boggs, Joseph E. Heard and C. Elmo Boyd of Shreveport; Mmes. Marcus C. Wiginton and S. J. Cali of Hammond; Mmes. Arthur D. Long, H. Guy Riche, Jr., Charles Prosser, Julius Muller, Jacob O. Hoth and James J. LaNasa all of Baton Rouge; Mmes. D. B. Barber, John Rozier, Milton S. Freeman, of Alexandria; Mmes. Ralph Talbot, Najeeb Klam and Mrs. DeWitt T. Milam of Monroe; Mrs. Rhodes Spedale, Plaquemine; Mrs. Fred Wild, Destrehan; Mrs. W. A. K. Seale, Sulphur; and Mmes. Walter Moss, P. L. McCreary and R. P. Howell of Lake Charles; and Mrs. Roy Carl Young, Covington.

IBERIA PARISH

The Iberia Auxiliary are at work on plans for financing a scholarship to send a deserving girl through nurse's training. This year more than ever they are taking an active interest in Red Cross work and in the Polio and Cancer Fund Drives. They have contributed much of their time to the blood bank and work at the Crippled Children's Clinic and with preschool examinations.

OUACHITA PARISH

Mrs. Cyril Yancey, essay contest chairman, reported at a recent meeting that all the high schools in Monroe and West Monroe, both white and colored, have been supplied with material relating to the national essay contest on "Why the Private Practice of Medicine Furnishes this Country with the Finest Medical Care." The response has been most satisfactory.

Mrs. Ralph Talbot, chairman of nurses recruitment committee, announces that a future nurse's club has been organized at Ouachita Parish High School with thirty members. Mrs. Clifton Flinn will serve as sponsor to this group. Plans are now underway to have a club at Neville.

Mrs. Najeeb Klam, president, said that $175 has been budgeted by the auxiliary for the nurse's scholarship fund and $50 for the A. M. A. Educational Foundation.

On December 10, Mrs. Edwin Socola, state president, was honored at a tea.

EAST BATON ROUGE

Mrs. Guy Riche, Jr., president, reports that their auxiliary in a drive for new members appointed a committee headed by Mrs. Sidney Mack to mail a letter to each doctor's wife in their parish inviting them to attend meetings and become members. The response was very good and many new members were enrolled. A panel discussion of "Know your Auxiliary" was held at the December meeting.

Mrs. Edwin A. Socola, state president, and Mrs. Marcus Wiginton, state president-elect, were honored at a luncheon meeting.

Mrs. Riche further reports that name tags are used at each meeting and this method has helped both the old and new members to get better acquainted. Mrs. D. W. Landess was appointed parliamentarian to replace the unfilled term of Mrs. Bryan Luikart. For this coming year the East Baton Rouge auxiliary have adopted the following state and national projects and have formed committees to carry out the work: Cancer Control, Doctor's Day, Voluntary Prepayment Plan, Commemoration Fund, Student Nurse Recruitment, Preservation of Medical Cultural Items, Civil Defense, Health Education, Legislation and American Medical Education Foundation Fund. Under the leadership of Mrs. Marion Kepfler and with the help of Mrs. Wiley Dial, the auxiliary has established a Nursing Scholarship at each of the two hospitals to which a sum of $400 was donated.

East Baton Rouge's Auxiliary has great plans for Doctors Day. Mrs. William Liukart and Mrs. Julius Mullins are co-chairmen for this event. At their last meeting Mrs. Dean Geheber, treasurer, reported that membership has been increased to 115 members.

The "Today's Health" committee headed by Mrs. William Derr sent a year's subscription to the magazine to each of the public and parochial schools in the parish.

BOOK REVIEWS

Contact Dermatitis; by George L. Waldbott, M. D., Springfield, Ill. Charles C. Thomas, (Amer. Lect. series Pub. no. 133) Price $8.75.

Presented is a new approach to the rapid diagnosis of contact dermatitis through the study of patterns on the skin. The author has dealt only with the practical aspects of contact dermatitis and purposely avoids detailed analysis of the chemicals involved. Allergists, dermatologists, and general practitioners will find this volume a veritable guide in the office. The text is so worded that, with the aid of an extensive glossary, patients may read the descriptions and thereby help the clinician to arrive at a diagnosis. Photographs of contacts with offending allergens are correlated conveniently on the same plate, thereby aiding the patient to develop insight. In the reviewer's experience with this book, it is not uncommon for the patient to discover the offending material through study of these patterns while awaiting examination and interrogation. Although much of the text is elementary in medicolegal industrial dermatology, the clinician, specialist, or others, will find this volume a time-saver in their practice.

JAMES W. BURKS Jr. M. D.

Principles, Problems, and Practices of Anesthesia for Thoracic Surgery; by Henry K. Beecher, M. D., Springfield, Illinois, Charles C. Thomas 1952, pp. 65. $2.50.

This monograph, which is one of the American Lecture Series, has been prepared by a recognized authority in the field of anesthesiology, both experimental and clinical. Dr. Beecher presents not only the problems which concern and vex the anesthetist, but he also gives a review of respiratory physiology and practical problems with which every surgeon who enters the chest is necessarily concerned. Preanesthetic preparation, the matter of positioning of the patient, the respiratory and circulatory problems which must be dealt with during operation, and postoperative precautions and management are all presented in a very concise and lucid manner.

AMBROSE H. STORCK, M. D.

Pain Syndromes and Their Treatment; by James M. Tarsy, Springfield, Illinois, Charles C. Thomas, 1953. Pp. 592. Price $12.00.

This is a well written book on the pain syndromes and their treatment. The majority of the syndromes covered are encountered with regularity by the general practitioner. The author has placed particular emphasis on proper examination and diagnostic methods and criteria. In his sections on therapy he discusses and illustrates various physiotherapeutic measures. The subject matter is well organized and should be useful to the specialist as well as to the general practitioner.

CHARLES C. ABBOTT, M. D.

PUBLICATIONS RECEIVED

Doubleday & Company, Inc., N. Y.: Children for the Childless, edited by Morris Fishbein, M. D.

Philosophical Library, N. Y.: Music Therapy, edited by Edward Podolsky, M. D.; Understanding the Japanese Mind, by James Clark Moloney, M. D.

W. B. Saunders Co., Phila.: Thoracic Surgery, by Richard H. Sweet, M. D. (2nd Edit.)

Clinical Results* with Banthine® Bromide

(Brand of Methantheline Bromide)

22 Published Reports Covering Treatment of 1443 Peptic Ulcer Patients with Banthine

Comprising the reports published in the literature to date which give specific facts and figures of the results of treatment

AUTHORS	No. of Patients	Chronic, Resistant to Other Therapy	TYPES OF ULCERS				RELIEF OF SYMPTOMS (Chiefly Pain)				Surgery or Compli-cations[1]	Side Effects Requiring Discontinuance of Drug[2]	EVIDENCE OF HEALING			
			Duodenal	Jejunal	Stomal	Gastric	Good	Fair	Poor	No Report			Complete	Moderate	None	No Report
Grimson, Lyons, Reeves	100	100	93	7			80	11	4		5		47		19	29
Friedman	15	15	14			1	5		4	6[3]			2			13
Bechgaard, Nielsen, Bang, Gruelund, Tobiassen	26	26	21			5	16	4	6				8	6	12	
McHardy, Browne, Edwards, Marek, Ward	162		162				136	12	11		3	1	14	9	7	129
Segal, Friedman, Watson	34	34	34[4]				14	13			7	2	5		8	14
Brown, Collins	117	99	117				97	7	8		5	8	55	9	8	40
Asher	77		65		7	5	52	9	16			16		9	21	47
Rodriguez de la Vega, Reyes Diaz	5	4	5				4		1					3	2	
Winkelstein	116	116	102	8		6	102		14				53		18	45
Hall, Hornisher, Weeks	18	18	18				11		1	6[5]			18			
Maier, Meili	38	38	24			14[6]	27	7	4[7]				10	2	5	21
Meyer, Jarman	25	18	25				21		4							25
Poth, Fromm	37	37	37				33	3	1				33	3	1	
Plummer, Burke, Williams	41	41	41				36		5				38		3	
McOonough, O'Neil	104	100	104				63	10	31			11	4		11	89
Broders	60	60	58		1	1	35	19	6				10	1	49[8]	
Legerton, Texter, Ruffin	11		11				11									11
Holoubek, Holoubek, Langford	76	69	76				35	27	10		4	10	26		10	36
Ogborn	42		39	2		1	42[9]									42
Sharken	48	48	48				33	10	3		2		33	10	3	
Johnston	145	145	145				143		2			2	143		2	
Rossett, Knox, Stephenson	146		141			5	146					4[10]	53			93
TOTALS	1443	968	1380	17	8	38	1142	132	131	12	26	54	552	52	179	634
PERCENTAGES		67.8	95.6	1.2	0.6	2.6	81.3	9.4	9.3			3.7	70.5	6.6	22.9	

1. Not included in tabulations.
2. Included in "Relief of Symptoms" as "Poor" and in "Evidence of Healing" as "None."
3. Four had no symptoms when Banthine therapy was begun.
4. Of which seven were penetrative lesions and five partially obstructive.
5. No symptoms were present in four.
6. Two with symptoms only; no demonstrable ulcer.
7. Three were psychopathic patients and one had a ventricular ulcer of the lesser curvature.
8. Roentgen findings after treatment period of two weeks; forty-seven had duodenal deformity.
9. All returned to work within a week.
10. In these four, after relief of symptoms, Banthine was discontinued because of urinary retention.

During the past three years, more than 250 references to Banthine therapy in peptic ulcer and other parasympathotonic conditions have appeared in medical literature. Of these reports, 22 have presented specific facts and figures on the results of treatment in a total of 1,443 peptic ulcer patients, 67.8 per cent of whom were reported as chronic or resistant to other therapy. These results are tabulated above and show:

"Good" relief of symptoms was obtained in 81.3 per cent of the 1,405 patients on whom reports were available.

"Complete" evidence of healing was obtained in 70.5 per cent of the 783 patients on whom reports were available.

In all but 9.3 per cent, relief of pain was "good" or "fair." In all but 22.9 per cent, evidence of healing was "complete" or "moderate."

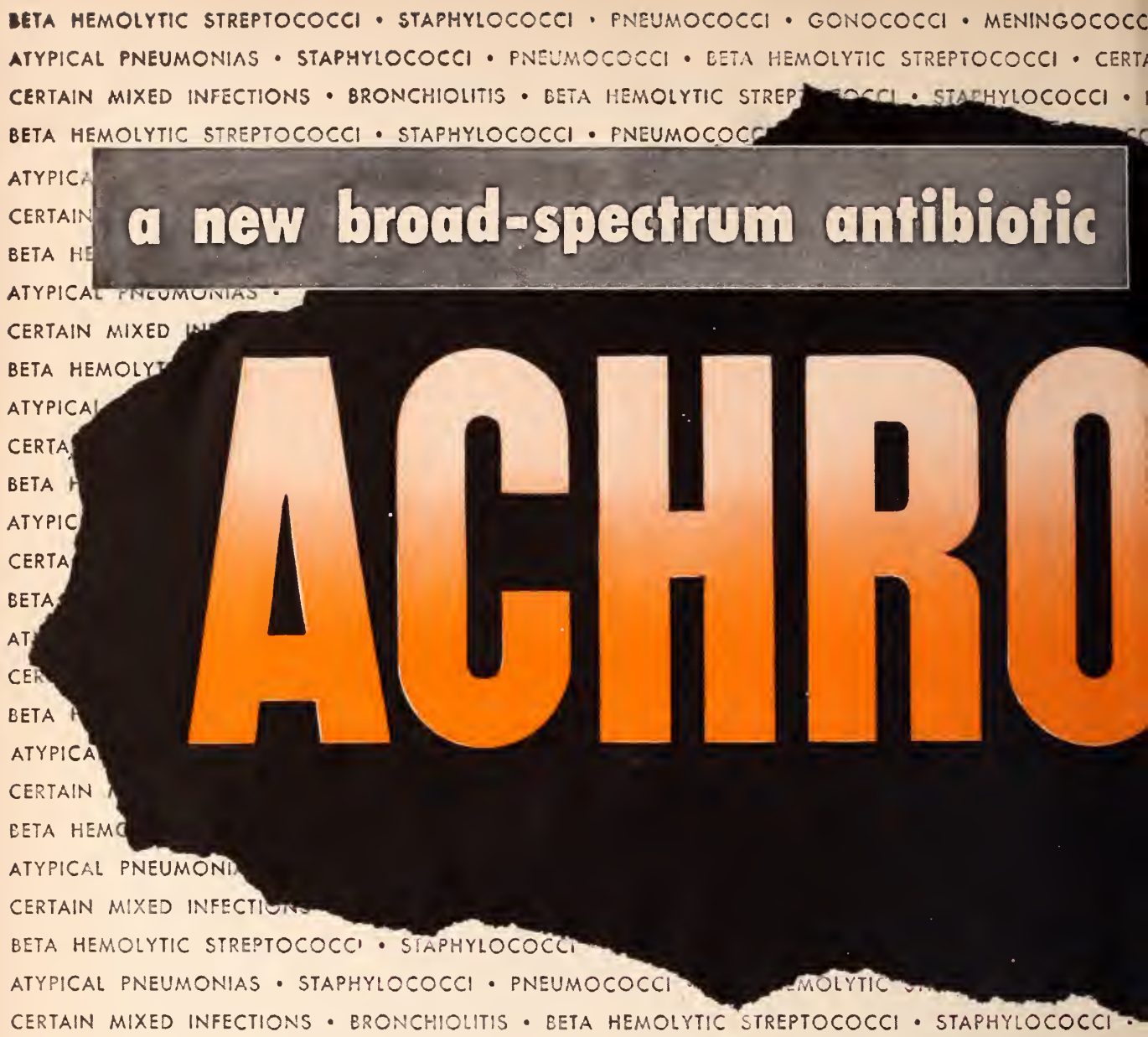
During treatment, 26 patients required surgery or developed complications other than ulcer which required discontinuance of the drug before results could be evaluated.

Of the remaining 1,417 patients, only 3.7 per cent experienced side effects sufficiently annoying to require discontinuance of the drug.

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*Volume containing complete references, with abstracts of 39 additional reports, will be furnished on request by

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ACHROMYCIN, a new broad-spectrum antibiotic developed by the Lederle research team, has demonstrated notable effectiveness in clinical trials.

ACHROMYCIN has definitely fewer side-reactions. It maintains effective potency for a full 24-hours in solution. It provides more rapid diffusion in body tissue and fluid.

ACHROMYCIN exhibits a broad range of activity against beta hemolytic streptococcic infections, *E. coli* infections, meningococcic, staphylococcic, pneumococcic and gonococcic infections, acute bronchitis and bronchiolitis, and certain mixed infections.

CAPSULES	250 mg. 100 mg. 50 mg.	INTRAVENOUS	500 mg. 250 mg. 100 mg.	SPERSOIDS* Dispersible Powder	50 mg. per teaspoonful (3.0 Gm.)



broader tolerance
greater stability
faster diffusion

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How to control itching and scaling for **1** *to* **4** *weeks*

You can expect results like these with SELSUN: complete control in 81 to 87 per cent of all seborrheic dermatitis cases, and in 92 to 95 per cent of common dandruff cases. SELSUN keeps the scalp free of scales for *one to four weeks*—relieves itching and burning after only two or three applications.

Your patients just add SELSUN to their regular hair-washing routine. No messy ointments . . . no bedtime rituals . . . no disagreeable odors. SELSUN leaves the hair and scalp clean and easy to manage.

Available in 4-fluidounce bottles, SELSUN is ethically promoted and dispensed only on your prescription. Abbott

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Sulfide Suspension

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in the treatment of a wide range of infections due to gram-positive and gram-negative bacteria, spirochetes, rickettsiae, certain large viruses and protozoa.

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rapid absorption — Within an hour after oral administration in fasting or non-fasting state, effective serum concentrations of Terramycin may be attained.[1] It is widely distributed in body fluids, organs and tissues and diffuses readily through the placental membrane.[2,3]

wide distribution

prompt response — Immediate evidence of Terramycin's efficacy is often obtained by the rapid return of temperature to normal.[4]

excellent toleration — Widely used among patients of all ages, this tested broad-spectrum antibiotic is well tolerated.[5,6]

1. Sayer, R. J., et al.: Am. J. M. Sc. *221*:256 (Mar.) 1951.
2. Welch, H.: Ann. New York Acad. Sc. *53*:253 (Sept.) 1950.
3. Werner, C. A., et al.: Proc. Soc. Exper. Biol. & Med. *74*:261 (June) 1950.
4. Wolman, B., et al.: Brit. M. J. *1*:419 (Feb. 23) 1952.
5. Potterfield, T. G., et al.: J. Philadelphia Gen. Hosp. *2*:6 (Jan.) 1951.
6. King, E. Q., et al.: J. A. M. A. *143*:1 (May 6) 1950.

Available in convenient oral, parenteral and ophthalmic preparations.

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WHEN SYMPTOMS ARE DISTRESSING BUT DISGUISED . . .

"It is strange," Malleson says, "how little clinical recognition" has been given to the "negative behavior" or "endogenous misery" of the woman with endocrine imbalance. Largely accountable for this, of course, is the patient's own reluctance to discuss these symptoms with her physician until she actually suffers from some of the more obvious menopausal symptoms such as hot flushes. Even then she may become so accustomed to her change in feeling she can't remember what it's like to feel well.[1]

Changes in the mood pattern are just a few of the many distressing symptoms of declining ovarian function which are so often disguised because they do not always coincide with cessation of menstruation, and at times will occur long before, and even years after. Other good examples are insomnia, headache, easy fatigability, arthralgia — and understandably so, when one considers that the loss of ovarian hormone "withdraws one of the most important metabolic regulators of the organism."[2]

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has no odor
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Estrogenic Substances (water-soluble), also known as conjugated estrogens (equine), available in both tablet and liquid form

1. Malleson, J.: Lancet 2:158 (July 25) 1953. 2. Goldzieher, M. A., and Goldzieher, J. W.: Endocrine Treatment in General Practice, New York, Springer Publishing Company, Inc. 1953, p. 23.

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Its therapeutic effectiveness substantiated by more than fifty published reports, BUTAZOLIDIN has recently received the Seal of Acceptance of the Council on Pharmacy and Chemistry of the American Medical Association.

In the treatment of arthritis BUTAZOLIDIN produces prompt relief of pain. In many instances relief of pain is accompanied by diminution of swelling, resolution of inflammation and increased freedom and range of motion of the affected joints.

BUTAZOLIDIN is indicated in:

Gouty Arthritis	Rheumatoid Arthritis
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Painful Shoulder (including peritendinitis, capsulitis, bursitis, and acute arthritis)

Since BUTAZOLIDIN is a potent agent, patients for therapy should be selected with care; dosage should be judiciously controlled; and the patient should be regularly observed so that treatment may be discontinued at the first sign of toxic reaction.

Physicians unfamiliar with the use of BUTAZOLIDIN are urged to send for complete descriptive literature before employing it.

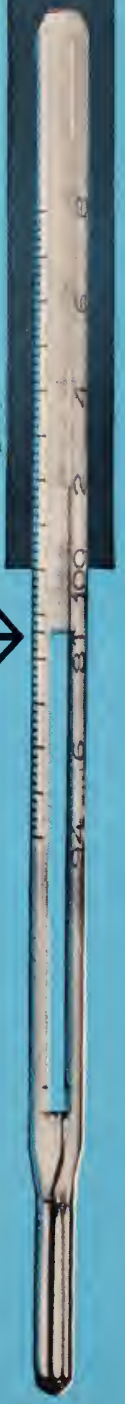
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"... reports on its use in patients with pneumococcal pneumonia, surgical infections, or urinary tract infections indicate that the oral administration of tetracycline is followed by rapid clinical response. **Symptoms, including fever, largely cleared up within 24 to 48 hours."**[1]

1. English, A. R.; P'an, S. Y.; McBride, T. J.; Gardocki, J. F.; Van Halsema, G., and Wright, W. A.: Antibiotics Annual (1953-1954), New York, Medical Encyclopedia, Inc., 1953, p. 70.
2. Finland, M.: Brit. M. J. 2:4846 (Nov. 21) 1953.

BASIC chemically

The structure of this *newest* antibiotic represents a nucleus of modern broad-spectrum antibiotic activity.

BASIC clinically

This *newest* broad-spectrum antibiotic has a wide range of action against respiratory, gastrointestinal, soft-tissue, urinary and mixed bacterial infections due to pneumococci, streptococci, staphylococci and other gram-positive and gram-negative organisms.

"Data thus far available would indicate that the use of tetracycline is accompanied by a significantly lower incidence of gastrointestinal symptoms . . ."[2]

This *newest* broad-spectrum antibiotic may often be used with good success in patients in whom resistance or sensitivity to other forms of antibiotic therapy has developed.

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TETRACYN TABLETS (sugar coated)
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and Adequate Protein Nutrition of the Diabetic Patient

Although formerly it was considered desirable in diabetes mellitus to hold protein intake only slightly above minimal requirements in order to minimize metabolic activity, present day treatment recognizes distinct benefits resulting from liberal protein alimentation.[1] Generous allowances of protein heighten the patient's sense of well-being, improve vigor, and augment the organism's inherent protective forces.

For the adult diabetic, desirable daily allowances of protein range from 1 to 1.5 grams per kilogram of body weight.[1] To assure adequate amounts of protein for growth and maintenance in diabetic children, allowances should range from 2 to 3 grams per kilogram. Following acute episodes during periods of inadequate insulin treatment, the concomitant negative nitrogen balance calls for high protein feeding until lost nitrogen is restored.[2] Though caloric intake is restricted for correction of overweight, protein allowances remain unchanged.

Meat ranks high among the foods qualified to provide the desired amounts of protein in diabetic diets. In fact, meat—because its rich store of protein is of highest biologic value—may well contribute a large share of the diabetic's daily protein requirement.[3]

In addition, meat also provides important amounts of essential B vitamins and minerals. Its appetite appeal goes far in enabling the diabetic patient to stay on his prescribed diet.

1. McLester, J. S., and Darby, W. J.: Nutrition and Diet in Health and Disease, ed. 6, Philadelphia, W. B. Saunders Company, 1952, pp. 287-299.

2. Pollack, H., and Halpern, S. L.: Therapeutic Nutrition. Prepared with Collaboration of the Committee on Therapeutic Nutrition, Food and Nutrition Board, National Research Council, Publication 234, 1952, p. 56.

3. Cecil, R. L., and Loeb, R. F.: A Textbook of Medicine, ed. 8, Philadelphia, W. B. Saunders Company, 1951, p. 634.

The Seal of Acceptance denotes that the nutritional statements made in this advertisement are acceptable to the Council on Foods and Nutrition of the American Medical Association.



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For the Peptic Ulcer Patient

BEDEVILED BY NIGHT PAIN

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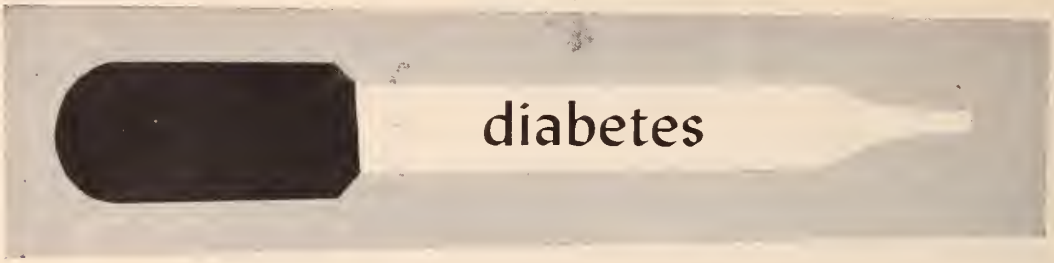
ALUMINUM HYDROXIDE GEL

AMPHOJEL helps patients sleep by neutralizing acid promptly . . . promoting pain relief through the night. A double dose at bedtime will effectively control "night pain" in most patients.

AMPHOJEL is a double gel—one *reactive*, for immediate buffering of gastric acid; the other, *demulcent*, for prolonged coating of the gastric mucosa—protection for the granulation tissue in the ulcer crater.

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Available: Suspension: Bottles of 12 fl. oz.
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Boxes of 60 (10 gr.)



"the ideal detection center is the office of the family physician"[1]

Found: 20,255 "new" diabetics in one year in the private practice of 5000 physicians responding to a nationwide poll.* Of these, 81% were detected by urine-sugar analysis; 62% of the physicians used *Clinitest*.

Only 19% of the diabetics in this survey were detected by findings other than glycosuria. "Every patient therefore should have at least one urinalysis as part of his examination, even if the purpose of his visit is only the removal of wax from the ears."[2]

CLINITEST®

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for detection of urine-sugar

***Data from nationwide poll: Diabetes in daily practice**

70% were over 40.
40% had a family history of diabetes.
65% were overweight.

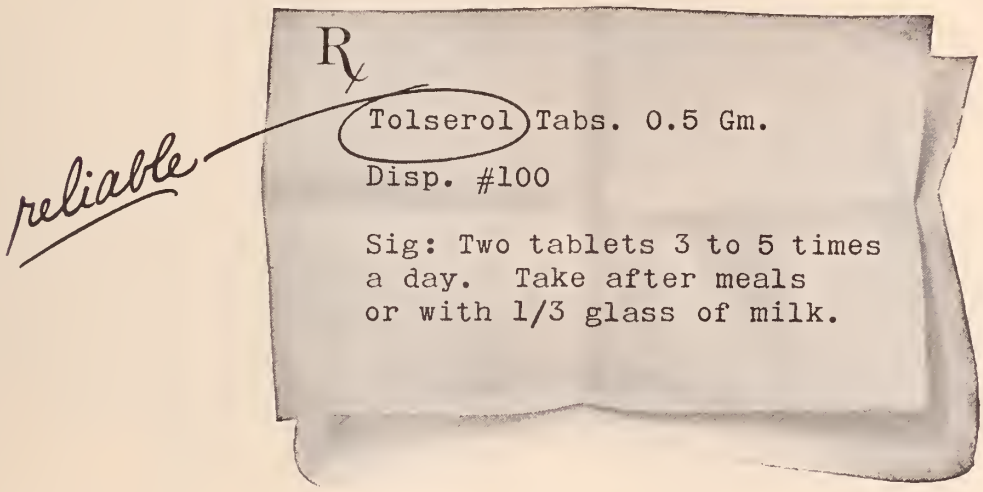
1. Blotner, H., and Marble, A.: New England J. Med. *245*:567 (Oct. 11) 1951.
2. Steine, L.: GP *8*:45 (July) 1953.

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The clinical effectiveness of different brands of mephenesin tablets depends on their rate of absorption. A mephenesin tablet that disintegrates slowly is absorbed slowly. The resulting low blood levels may never produce a maximum therapeutic effect. Results with such a tablet are usually poor.

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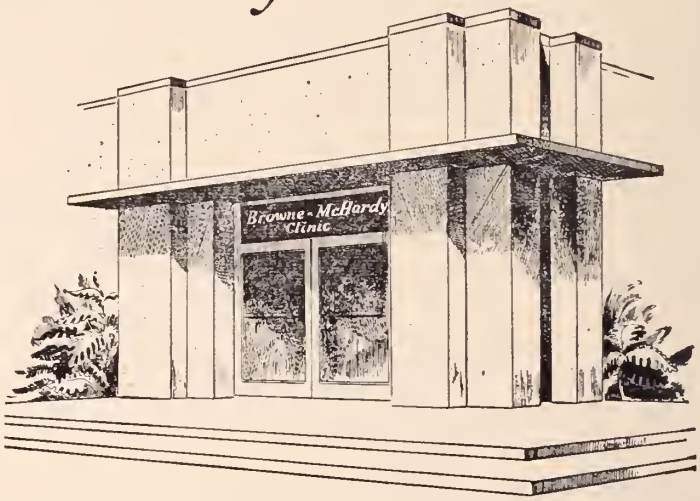
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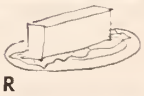

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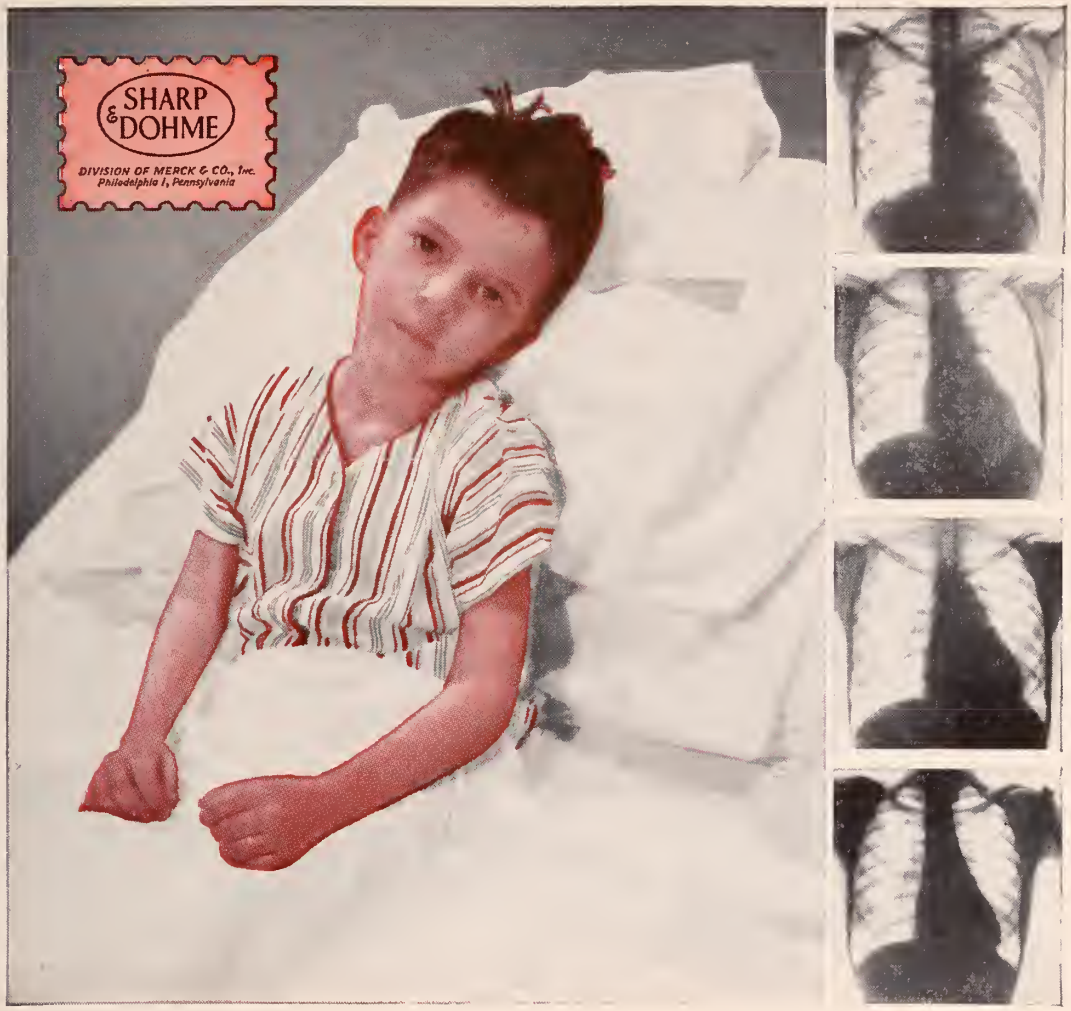
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MEDICAL MANAGEMENT OF PATIENTS WITH URINARY STONE

EDWIN L. PRIEN, M. D.
BROOKLINE, MASS.

The medical management of stone-forming patients is important because of the well known tendency to recurrence in 15 to 20 per cent of all cases. Unfortunately, our stone prevention programs have not been too successful. As a result of the study of calculous disease by new techniques for the past fifteen years, it has been possible to obtain new data on the stone forming process which may be of value in prevention of recurrence. The techniques which were used in this study were borrowed from mineralogy and are called polarization optics and x-ray diffraction photography. Since urinary calculi are crystalline it is possible to study them with the techniques used to study the crystals of minerals. With these methods it is possible to accurately identify crystalline material, even in microscopic amounts. With the petrographic (polarizing) microscope it is also possible to study intimately the relationship of such crystalline material to its surroundings, even when in situ in the tissue of the kidney. This instrument makes it possible to analyze all portions of a urinary calculus, including the nucleus and the various layers, and to learn something of the manner in which it was formed. It is believed that the first portion of the stone formed, called the nucleus, is of causal significance. This will be discussed later. The nucleus may usually be found only by optical study. The techniques used, the descriptions of the various crystalline components of calculi, and the clinical implications of these findings have been reported in previous papers [1, 2].

This paper concerns itself mainly with the details of management of patients who have calcium-containing calculi, comprising approximately 90 per cent of all cases of urolithiasis in North America. There are probably only 3 important crystalline substances in calcium-containing calculi—calcium oxalate, calcium phosphate, and magnesium ammonium phosphate. The presence of the third substance in a calculus is almost always due to urea-splitting infection.

PRIMARY AND SECONDARY CALCIUM-CONTAINING CALCULI

The calcium-containing calculi fall naturally into two groups on a clinical basis. The distinction seems to be based mainly on urinary reaction. Primary calcium-containing calculi occur in individuals with an acid urine in an apparently normal urinary tract and are usually composed of calcium oxalate or of mixed calcium oxalate and calcium phosphate. If infection is present it is by organisms which do not render the urine alkaline.

The other group of calcium-containing calculi are generally considered "secondary" calculi,—secondary to or associated with other urinary tract pathology, such as obstruction, stasis, or chronic infection. The urine is almost invariably alkaline due to the presence of urea-splitting organisms. These stones are generally com-

* Presented at the Seventy-third Annual Meeting of the Louisiana State Medical Society, May 9, 1953, in New Orleans.

posed of magnesium ammonium phosphate and calcium phosphate—and are exemplified by the common dendritic or "staghorn" stone.

This classification is summarized in Table 1.

TABLE 1
CONDITIONS OF OCCURRENCE OF CALCIUM-CONTAINING CALCULI

Content	Environment
Calcium oxalate or Calcium oxalate-calcium phosphate	Normal urinary tract, urine acid usually, infection + or —
$MgNH_4PO_4 \cdot CaPO_4$	Abnormal urinary tract, alkaline urine, urea-splitting infection

However, all calculi which are of the "staghorn" or dendritic type are not associated with urea-splitting infection. About 20 per cent of them are composed of almost pure calcium phosphate, and occur in a urine most commonly slightly acid.

As a result of infection by urea-splitting organisms a primary stone of any composition may acquire an external portion of calcium phosphate and magnesium ammonium phosphate and have the external appearance of an "alkaline infection" stone. It is unwise to guess at the composition of a stone from its external appearance. Color is also an unreliable guide. I have seen calcium oxalate, calcium phosphate, and uric acid stones all of identical color and texture.

We commonly divide calcium-containing calculi into "oxalate" and "phosphate" stones, implying that the "phosphate" calculi are secondary stones associated with urea-splitting infection. This is not always true, either from the standpoint of pathogenesis or treatment. All phosphate stones do not occur in an alkaline urine but some may occur in an acid urine with no urea-splitting infection being present (as we have just pointed out). Furthermore, many of the primary "oxalate" stones contain large amounts of phosphate. In fact, many of these so-called "oxalate" stones originated as "phosphate" stones because the nucleus is of calcium phosphate.

The noncalcium containing calculi are composed of uric acid and cystine. Usually (but not always) these are "pure" calculi. They occur in acid urine, usually uninfected (except secondarily).

THE NUCLEUS

A nucleus in physical chemistry is that part of a concretion which is formed first and upon which further precipitation occurs to produce growth of the concretion. Optical study has shown that many calculi have a demarcated portion, often of different composition or structure than the rest of the stone, and so situated that it must represent the first portion of the stone formed.

Theoretically, the nucleus should be a very minute structure—the first particle deposited from solution. In calculi the term is applied to a larger structure, varying from microscopic size to several millimeters in its dimensions. Obviously, this larger "nucleus" is an extension of the growth of the first particle deposited from solution and is of the same composition.

There are two ways in which nuclei are formed:

1. From Randall's plaques [3] situated upon the renal papilla. Deposits of crystalline material, most commonly of calcium phosphate, occur beneath the epithelium of the renal papilla. When, by accident of position, this submucosal plaque erodes to the calyceal surface, it becomes exposed to the supersaturated urine of the calyx. Precipitation of urinary salts upon this nucleus produces an asymmetrically developed stone with the nucleus upon the external surface of the stone. (Fig. 1)

2. The second way in which nuclei are formed is by precipitation of urinary salts in the urine itself (not upon a mucosal surface as above). Such a nucleus occurs in the center of a symmetrically developed stone. (Fig. 2)

The nuclei of the great majority of calcium-containing calculi are composed of calcium phosphate and this applies also to the nuclei of calcium oxalate calculi. A detailed consideration of the nucleus appears in a previous paper [2].



Figure 1.—Asymmetrically developed calcium oxalate calculus with a calcium phosphate nucleus upon the external surface of the stone. Develops from a Randall's plaque upon the mucosa of the renal papilla.

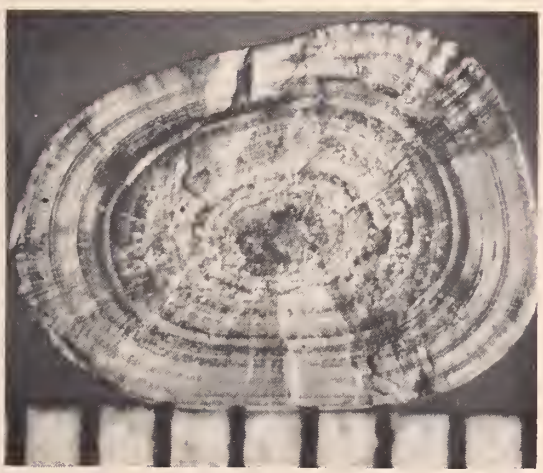


Figure 2.—Symmetrically developed uric acid calculus with a central nucleus of uric acid. Originates in urine by simple precipitation from solution.

SUPERSATURATION OF URINE

Meyer [4] found that normal urine is commonly supersaturated 2 to 4 times with some of the stone-forming salts at all *p*H levels without precipitation occurring. It is able to retain these salts in such a supersaturated state *for a time if no nucleus is present.* If a nucleus *is* present precipitation may occur whenever the concentration exceeds the saturation point. So that, whereas the average person may be able to keep his urine supersaturated 2 to 4 times with the various urinary salts, the person with a nucleus present in the urinary tract may precipitate salts whenever the saturation point is exceeded. It would seem desirable, therefore, to conserve this power of urine to hold its salts in supersaturated solution by preventing nuclei from forming.

Meyer found that: (Fig. 3)

1. The average amount of uric acid present in normal urine supersaturates it

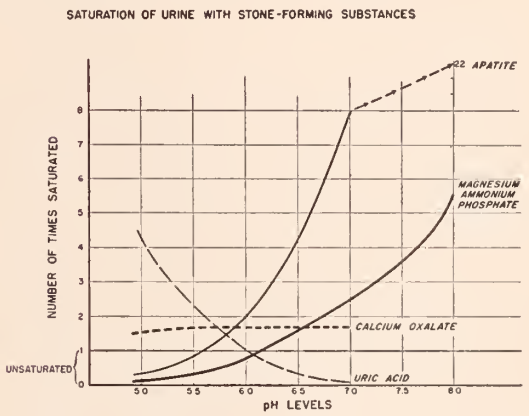


Figure 3.—Saturation of urine by the average amount of each of the common stone-forming salts present in normal urine, according to J. Meyer. Normal urine is able to maintain its salts in a 2 to 4 times supersaturated solution for a time without precipitation occurring if no nucleus is present. In the presence of a nucleus precipitation may occur when the saturation point is exceeded. (Apatite is calcium phosphate).

4 times at *p*H 5.0 but unsaturates it above *p*H 6.0. This means that the solubility of uric acid increases with increasing alkalinity. So we alkalinize the urine to prevent uric acid stone. The same applies to cystine.

2. The average amount of calcium oxa-

late present in normal urine supersaturates it 1.7 times and the solubility is practically unchanged by changing the *p*H. Therefore, acidification or alkalinization of the urine is useless in treatment to prevent calcium oxalate stone.

3. The average amount of calcium phosphate present in normal urine supersaturates it 8 times at *p*H 7.0, supersaturates it 4 times at *p*H 6.5, supersaturates it only 2 times at *p*H 6.0 and unsaturates it below *p*H 5.6. Note that the solubility of this average amount of calcium phosphate approximately doubles with each half unit fall in *p*H. This is a very substantial increase in solubility in a narrow *p*H range. Of course, stone-forming patients often have increased amounts of calcium phosphate present in the urine; solubility of these increased amounts of calcium phosphate will not be doubled under these circumstances but it will be increased.

Similar values obtain for magnesium ammonium phosphate but they are less remarkable than is the case with calcium phosphate.

So that we acidify the urine to increase the solubility (decrease the degree of saturation) of calcium phosphate and magnesium ammonium phosphate.

UREA-SPLITTING INFECTION

With the onset of urea-splitting infection marked alkalinity of the urine occurs and calcium phosphate and magnesium ammonium phosphate are precipitated in increasing amounts. The marked insolubility of these two substances in alkaline urine emphasizes the necessity of eradicating urea-splitting infection if we are to prevent recurrence of such calculi. This is often a difficult problem, even in these days of potent antibiotics. If the *p*H cannot be lowered stone recurrence will usually follow.

HYPERCALCURIA

Flocks [5], Albright [6] and others have shown that a relationship exists between the amounts of calcium present in the urine and the incidence of calcium stone. The amount of calcium excreted may be increased by excessive ingestion of calcium-containing foods or calcium salts, excessive ingestion of vitamin D, hyperparathyroidism, acidosis (as of ammonium chloride therapy), disuse atrophy of the bony skeleton caused by prolonged immobilization of fractures, muscular paralysis or debilitating disease, postmenopausal osteoporosis, Cushing's syndrome, and sarcoid.

Excessive Ingestion of Calcium in Food and Medication.—Milk is the main source of calcium in our diet. Many persons drink large quantities of milk because it is a "perfect" food or because it is indicated in peptic ulcer; the etiologic relationship to stone is obvious. The use of calcium salts for peptic ulcer is open to the same objection. The administration of large amounts of vitamin D for rickets, tetany and rheumatoid arthritis will produce hypercalcuria. Happily this form of therapy is no longer popular.

Hyperparathyroidism. — Hyperparathyroidism is the cause of about 5 per cent of urinary calculi. In this condition the blood serum calcium is elevated and the blood serum phosphorus depressed. However, both the urinary calcium and phosphorus are increased.

Commonly a blood serum calcium level in excess of 10.5 mg. per 100 cc. and a blood serum phosphorus level below 3.0 mg. per 100 cc. should raise the suspicion that this disease may be present. One should place more reliance on a low serum phosphorus level than on a high serum calcium level because the test for phosphorus is easy and reliable while the test for calcium is often unreliable. In a patient with calculi the criteria for making the diagnosis of hyperparathyroidism are, in order of importance: (1) a serum phosphorus below 3 mg., (2) hypercalcuria in excess of 150 mg. per day, and (3) an elevated serum calcium.

It has been my observation that physicians tend to rely almost entirely upon the serum calcium and phosphorus levels in making the diagnosis of hyperparathyroidism to the almost virtual exclusion of urinary calcium studies. We find it useful to

do twenty-four hour quantitative urinary calcium determinations in borderline cases with the patients on a standard low calcium diet and regard a urinary calcium excretion of 150 mg. per day as the upper limit of normal.

We also find that the use of the Sulkowitch reagent is valuable as a rough bedside or office test to determine whether hypercalcuria is present or not. If the test shows that little calcium is present on several determinations it is very unlikely that hyperparathyroidism is present. On the other hand, if the test repeatedly shows large amounts of calcium one has to be cautious about ruling out hyperparathyroidism, even if the first serum calcium and phosphorus levels are within normal limits (from Albright).

Acidosis.—Acidosis as a cause for hypercalcuria must receive consideration because acidification therapy is used in prevention of calcium-containing calculi. Ammonium chloride and acid-ash diets are commonly prescribed to acidify the urine because calcium phosphate and magnesium ammonium phosphate are more soluble in an acid urine. Acidification therapy may produce acidosis with consequent increased rate of dissolution of bone and resultant hypercalcuria. Under these circumstances any benefit achieved by increased solubility of calcium phosphate may be partially or completely nullified by increased excretion of the same salt.

Disuse Atrophy of Bone.—The demineralization of bone in immobilized patients leads to the so-called recumbency calculi. This demineralization may be mitigated to some extent by frequent changes in position of bedridden patients, by bed exercises, and early ambulation. The services of a physiotherapist are invaluable in this regard. Do not give large amounts of milk to immobilized fracture patients because of the mistaken idea that a large amount of calcium in the diet is necessary to heal a fracture; it only leads to stone formation.

Idiopathic Hypercalcuria.—Flocks found that many patients with calcium urolithiasis "have a high urinary calcium excretion without any bone disease, evidence of hyperparathyroidism, change in the blood calcium or phosphorus levels, or other demonstrable abnormality of calcium metabolism." Multiple calculi may be present, often limited to one kidney. The kidneys may appear normal by pyelographic study and there may be no discernible diminution in renal function. Albright and Reifenstein [6] find that many of these cases have or have had a staphylococcal pyelonephritis. Prognosis is guarded; about half will recover completely (private communication). The mechanism may be some form of renal tubular damage.

PRINCIPLES—MEDICAL MANAGEMENT TO PREVENT RECURRENCE

The underlying principle in prevention of stone is to prevent the excess supersaturation of the urine by substances which might precipitate to form stone. We will exclude, for the moment, the intangibles of vitamins and colloids but will mention them later. There are three ways to reduce the degree of saturation of the urine with stone-forming salts: (1) by increasing urinary volume to dilute the concentration of salts; (2) by decreasing urinary excretion of the offending crystalloid; and (3) increasing urinary solubility of the offending crystalloid.

Forcing Fluids.—Forcing of fluids is the most reliable method of reducing urinary supersaturation. The nuclei of calculi are small and may form in a short time in a concentrated urine. With this in mind it is my feeling that the statement to "force fluids" must be amplified by instructions to the patient to prevent even transient dehydration *in the patient who is a recurrent stone former.* This must be stated in terms understandable to the patient. To merely tell a patient to drink a certain quantity each day is not enough. The recurrent stone former must be told to spread his fluid intake over his waking hours, including some fluids in the evening even if it results in some nocturia. Of course, the instruction of the patient should be tempered by the gravity of the

situation. More cooperation may be expected from the patient who has had considerable trouble in the past.

MEDICAL MANAGEMENT: CALCIUM-CONTAINING CALCULI

Specific therapy to prevent recurrence of calcium-containing calculi consists mainly in keeping as much calcium out of the urine as possible and in keeping in a dissolved state those phosphate salts which do get into the urine. This is accomplished by combinations of diet and acid salt therapy which decrease calcium excretion in the urine and render the latter more acid, and by the control of urea-splitting infection. While it has not been conclusively shown that high oxalate foods contribute to calcium oxalate stone formation, avoidance of considerable amounts of such foods would seem justified. It is understood, of course, that other well-recognized measures of therapy, such as surgical removal of urinary tract obstructions, treatment of all urinary infections (in addition to urea-splitting infection), and treatment of other relevant lesions, such as foci of infection, outside the urinary tract, must also be carried out.

Specific Treatment of Calcium Oxalate Calculi.—It has been generally assumed that there is little we can do to prevent recurrence of calcium oxalate stone except to force fluids. However, crystallographic study has shown that calcium phosphate occurs as the nucleus in the majority of stones of predominant calcium oxalate composition. Calcium phosphate is increasingly soluble in acid urine. Because the absence of a nucleus may permit the urine to maintain its dissolved calcium oxalate in supersaturated solution more readily, it is hereby suggested that we treat calcium oxalate stone-formers by acidification therapy to prevent the calcium phosphate nuclei from forming. It is fair to state that the validity of this proposition has not been tested upon any long series of patients.

Calcium oxalate stone-formers should refrain from eating large amounts of food high in oxalate even though it has not been demonstrated that high oxalate foods are a factor in stone formation. (See list in Treatment Summary at end of paper). While tea and coffee also contain considerable amounts it is to be remembered that we do not eat these substances but only drink a beverage made by heating them in water.

Low Calcium Diet.—Milk is the most abundant source of calcium in the American diet. In general, I have been content to severely restrict the use of milk and its products, except for butter, in patients with hypercalcuria and to pay little attention to other calcium-containing foods. This simple restriction is easy to remember and no patient should complain that such a regimen is arduous. It should be obvious that cream, cheese, condensed milk, buttermilk, ice cream, cream soups, milk gravies, cheese souffles, Welsh rarebits, and custards, are included in the forbidden list. Butter contains little calcium and may be used freely. On such a diet the intake of calcium will not exceed 150 mg. daily.

Occasionally, a stone-former will be discovered who has some peculiar dietary habit. We found one woman who ate a large amount of molasses on bread daily. Molasses is a high calcium food with a very high alkaline ash and, therefore, doubly undesirable. We also found a cook in a restaurant who passed 11 stones in two years and who "nibbled" on handsful of olives, raisins, shelled nuts and slabs of cheese, (all high calcium foods), daily at his work. The average person eats no molasses at all and his intake of such foods as olives, raisins and nuts is so low that they need not be included in a routine list of forbidden foods. There is nothing so frustrating to the average stone-forming patient as a long list of forbidden foods, most of which he rarely eats. However, it is a good idea to run through the list of high calcium foods at the end of this paper with the patient; if it appears that any of them are eaten in large amounts their use should be reduced to "normal" amounts. In some high calcium foods the

calcium is combined with oxalate; it is extremely doubtful that the calcium will be absorbed when so combined.

Acidification of Urine.—The solubility of calcium phosphate and magnesium ammonium phosphate increase with increase in acidity of the urine. Higgins [7] first called attention to the possibilities of acidification therapy by dietary means to prevent urinary calculi. By the use of acid ash diets he has been able to prevent recurrence of phosphatic calculi and to produce dissolution of some renal calculi in situ. He has stressed that such treatment does not always work. Many workers have had little success with this method. It may be pointed out that it is quite feasible to produce resorption of a small calyceal calculus when it is composed of calcium phosphate. If the calcium phosphate nucleus has acquired an external layer of calcium oxalate much less should be expected from attempts at resorption by producing an unsaturated urine; calcium oxalate is resorbed with difficulty.

In general, meats and cereals promote an acid reaction in the urine while fruits, vegetables and milk produce an alkaline reaction. There are numerous exceptions; for instance, cranberries, plums, and prunes render the urine acid. The consumption of orange juice, grapefruit juice and tomato juice should be investigated if one is attempting to produce an acid urine; many people consume large amounts of these juices. Although they are only weakly alkaline ash foods an excessive consumption might pile up an excess of alkaline ash radicles which would be undesirable. Keep the intake of these juices down to a reasonably low level. Check over the list of high alkaline ash foods in the summary at the end of the paper to be sure that your patient does not consume large amounts of any one.

It has been the writer's experience that most patients will not remain on stringent diets for a long time but are quite willing to take oral medication. Where such "pill swallowing" is without demonstrable harmful effects and accomplishes the desired result it is my feeling that it is to be preferred to severe restriction in diet, for the practical reason that it may result in longer cooperation on the part of the patient. The combination of mild dietary restriction plus harmless acidifying salt therapy is worthy of a trial in many patients; it is not indicated in all.

Ammonium chloride, acid ash diet, and sodium acid phosphate have been used to acidify the urine. The first two are open to the objection that they may produce acidosis and bone demineralization and may increase the excretion of calcium phosphate in the urine.

Cordonnier and Talbot [8] have found that sodium acid phosphate is the drug of choice in patients with calcium-containing calculi. It is a moderately effective acidifier. In addition, it reduces urinary calcium excretion by depressing serum calcium levels slightly. There may be an increase in urinary phosphorus excretion but it is mostly in the form of soluble sodium acid phosphate. Administration of sodium acid phosphate will not produce acidosis or bone demineralization, even if used in large dosage over a long period.

There has been no apparent change in the serum calcium levels of any of the patients taking sodium acid phosphate, either in my own series or that of Cordonnier (private communication). The customary dosage of sodium acid phosphate is 0.6 gm. (10 grains) four times daily. On this dosage Cordonnier was able to reduce urinary calcium excretion 50 per cent both in ambulatory and recumbent patients.

A possible objection to the use of sodium acid phosphate occurs in urea-splitting infection. In this condition the use of the salt may throw an added amount of phosphate into the urine, presumably in an insoluble form as magnesium ammonium phosphate, to increase the already excessive deposition of that salt. In acid urine the phosphate occurs in solution as sodium acid phosphate which is quite soluble.

Determination of Urinary pH.—Urinary *p*H is determined with a liquid colorimet-

ric indicator, (the LaMotte *p*H Indicator*). This is quite superior to most of the paper indicators because it gives a definite color change for each 0.5 unit change in *p*H, from a scarlet red at *p*H 4.5 to a blue green at *p*H 8.0 The writer has had some difficulty in determining half unit changes in *p*H with nitrazine paper.

Determination of Urinary Calcium.—The Sulkowitch test is used for rough quantitative determination of urinary calcium in the office or at the bedside. A bottle of the reagent should stand on the same shelf with reagents used to determine urinary albumin and sugar. The test is very simply and quickly done.

The Sulkowitch reagent is made as follows: oxalic acid 2.5 gm., ammonium oxalate 2.5 gm., glacial acetic acid 5.0 cc., distilled water q. s. ad 150 cc. A calcium determination is made by adding 2 cc. of the reagent to 5 cc. of urine in a test tube and noting the result. If no calcium is present the urine will remain clear. If calcium is present it will be precipitated as calcium oxalate, forming a white cloud or turbidity whose density will vary with the amount of calcium. The density of the turbidity should be recorded as 0 or 1 to 3 +. It is necessary to take into consideration the specific gravity of the urine in evaluating the Sulkowitch test. One should familiarize himself with the range of results possible with this test by using it routinely on a series of patients, including non-stone formers, for a while before attempting to interpret results.

Normal urines may show but slight turbidities; these are classed as 1 +. Moderate to marked turbidity represents hypercalcuria of grades 2 or 3, making due allowance, of course, for the concentration or dilution of the urine. A strongly positive 2 or 3 + Sulkowitch test will suggest hyperparathyroidism and make further study necessary. If repeated studies rule out this disease one looks for another cause or thinks of "idiopathic hypercalcuria."

Details of pH and Calcium Control.—It should be pointed out that determinations of urinary calcium and *p*H upon a single urine are of limited value in a stone prevention program because of the variability of these values in most individuals. Reliance should only be placed upon determinations made on several urines taken at different times of the day and this should be repeated at intervals. Until a treatment regimen has been stabilized the patient should be seen as often as twice weekly. At each visit the patient is asked to bring along several specimens collected at various times of the day, including the first urine in the morning.

An attempt should be made to keep the *p*H of the urine as low as possible in patients with calcium-containing calculi. The normal urine is unsaturated with calcium phosphate below *p*H 5.6 and one should strive to approach this *p*H value. Any significant decrease in *p*H accomplished on the acid side of neutrality is worthwhile, as was pointed out in an earlier paragraph. It will ordinarily be impossible to acidify the urine in the presence of urea-splitting infection, or in patients who regularly take alkalies or milk of magnesia.

If the *p*H cannot be brought down lower than 7.0 greater emphasis must be placed upon the two other methods of decreasing the degree of supersaturation of the urine by stone-forming salts. These are (1) forcing of fluids to increase the urinary volume (and thus dilute the concentration of the salts), and (2) restriction in the intake of calcium in the diet. It should be pointed out that the former is always of value while the latter often fails.

Careful maneuvering by adjustment of acidification, dietary calcium, and fluid intake may sometimes so reduce the supersaturation of the urine that precipitation and consequent stone-formation may be inhibited. I am very conscious of the fact

*The LaMotte Reaction Outfit is obtainable from the LaMotte Chemical Co., Towson, Baltimore 4, Maryland.

that the desired result is not always achieved.

Chronic Infection with Stone.—In certain patients who have some degree of renal insufficiency with chronic changes (parenchymal scarring, dilated atonic pelves and ureters), it is manifestly impossible to eradicate urea-splitting infection or to acidify the urine. Sodium acid phosphate will be useless as an acidifier, and may be contraindicated.

Shorr [9], in 1945, proposed the use of aluminum hydroxide jel (amphojel), and more recently basic aluminum carbonate jel (basaljel),[10] to reduce the amount of phosphorus absorbed from the bowel, and thus to reduce the amount excreted by the kidneys. The phosphorus is converted to an insoluble aluminum phosphate in the intestine and excreted in the stool. A low phosphorus diet is also given. Shorr has pointed out that impaired renal function and urinary infection do not hamper the effectiveness of this form of therapy. It may be used in uremia. Marshall [11] has reported favorable results, especially in patients who show a marked tendency to stone recurrence associated with intractable infection and chronic changes in the urinary tract. Nephrectomy should be considered in patients with severe *unilateral* lesions of this type. The basaljel-low phosphorus diet regimen has also been used with success in the prevention of recumbency calculi.

In my own experience the amount of any of these aluminum jels necessary daily has posed a problem for patients with sensitive stomachs; it may fairly be said that these compounds are unpleasant to take. Under the circumstances, a high degree of cooperation will be difficult to obtain except in patients who have a very serious stone situation.

MEDICAL MANAGEMENT: URIC ACID AND CYSTINE CALCULI

The application of isotope techniques has shown that uric acid is synthesized in the body from the simplest carbon and nitrogen compounds and not exclusively from ingested preformed purines and nucloproteins as had been thought. Therefore, restriction of diet to prevent uric acid stones is not indicated. There is no dietary treatment for cystine stone.

Prevention of uric acid and cystine stone depends on alkalinization of the urine. The solubilities of these substances are considerably enhanced in alkaline urine. The best alkalinizer is sodium citrate as proposed by Albright. Alkaline ash diets are not used because they are unnecessary; patients much prefer the sodium citrate. A rounded teaspoonful (3 or 4 grams) three or four times daily in water has sufficed to keep the *p*H at 7.5. This salt may be bought by the pound and used indefinitely without harm. It is mandatory that patients check the *p*H of their urines to maintain the proper alkalinity. Nitrazine paper will be adequate for this purpose. Occasionally, alkalinization of the urine has merely changed the composition of the stone in a uric acid or cystine stone-former; calcium phosphate and magnesium ammonium phosphate have been precipitated instead. To prevent this a low calcium diet should be given with the alkali.

THE IMPORTANCE OF VITAMINS AND NUTRITION

It is felt by some that vitamin A deficiency is an important factor in stone formation. While avitaminosis and malnutrition probably are factors in stone formation in the endemic stone areas of Asia, it is doubtful that they are important factors in most of North America with its high standard of nutrition. I find no reason to give supplementary vitamins to stone-forming individuals who are eating a well-rounded diet.

HYALURONIDASE

The importance of colloids in increasing the solubility of the stone-forming substances in the urine has been warmly debated. Following Meyer, I have felt that colloids were unimportant. Recently Butt has found that an enzyme, hyaluronidase, injected subcutaneously, produces a protective colloidal effect in the urine. In some instances turbid urine is rendered clear and free from sediment for periods

up to twenty-four hours or longer after injection. There is considerable variation in this reaction; many patients get no clearing of the urine at all and in others it lasts for only a few hours or is minimal.

Butt [12] has reported success with this preparation in a series of patients who had multiple, bilateral, rapidly recurring calyceal calculi. In our slight experience it has failed to prevent bladder calculi in recumbent patients.

We have been studying the fundamentals of the action of this enzyme upon the urinary crystalloids. Thin films of urine dried upon scrupulously clean glass slides are made from the voided urine before injection of the enzyme and at stated intervals after injection until the effect (if any) of the enzyme has disappeared. The slides are then examined upon a special darkfield microscope, called an Ultropak, in which the light comes down from above (instead of up from below as in the conventional darkfield microscope). The effect seen microscopically does not always parallel the gross clearing effect.

In certain cases (fortunately few) the aggregation of crystals is enhanced and stone formation facilitated by the enzyme. This reaction is known as sensitization in colloid chemistry. The enhanced aggregation of crystals in these cases is said to be due to too small a dose of hyaluronidase. Recently, such a case was seen in consultation in which a large cystine stone, completely filling the kidney pelvis, formed in slightly more than two months after removal of a small cystine stone from the same kidney. The patient had received 150 units of hyaluronidase on alternate days for two months. Nephrectomy became necessary. Several other cases in which stone formation occurred rapidly under hyaluronidase therapy are known, apparently due to sensitization.

Hyaluronidase should not be given to stone-forming patients promiscuously. A study of the clearing effect on turbid urine should show a definite and pronounced clearing effect for at least twelve hours after 300 units or more of the enzyme are given subcutaneously as a prerequisite for hyaluronidase therapy. This preliminary test is described by Butt and should be followed carefully.

Dosage requirements will vary greatly. We have found it necessary to give up to 1500 units twice daily in stone cases associated with infection, especially urea-splitting infection, in order to keep the urine clear. One pharmaceutical house (Wyeth) now furnishes an ampule containing 1500 units of the enzyme (cost $3.60 here in Boston now). In many cases even dosages of this size fail to render turbid urine clear. No significant unfavorable reaction to the enzyme has occurred in our cases.

There is some experimental evidence that the sensitization reaction may at times be manifested as the effect of a dose of hyaluronidase wears off. This would suggest that adequate doses of the enzyme should be spaced close enough together to produce a slight overlapping effect.

All stone-formers do not have a turbid urine, however. This makes it difficult to determine the proper dosage of the enzyme. A study of urinary films with the Ultropak microscope is of value in such cases and may determine the proper dosage. I should like to emphasize that I do not regard the Ultropak microscope as a tool of utter precision for this work. Considerable experience is necessary in the use of this instrument in this almost unknown field in order that the findings may be properly interpreted. Extreme variations occur in one and the same urinary film; much of this is probably artifactual and occurs in the making and drying of the slide. However, this technique is the only one of significant value at the present time. In the present state of our knowledge I definitely advise against the purchase of this expensive instrument for a study of this kind.

It is too soon to evaluate Butt's original idea. It takes time to produce calculi and still longer to prove that a particular type of treatment has prevented them. We have had no patient on the enzyme clinically for long periods of time. *What*

has been said does not constitute an endorsement for the use of hyaluronidase to prevent stone. In the present state of our knowledge it would appear that hyaluronidase therapy is not indicated in most stone cases but may be tried in rapidly recurring cases, in those in which intractable infections and other complications exist, and in cases in which our other techniques, after proper application, have failed.

CONDENSED SUMMARY OF MEDICAL MANAGEMENT

For all cases—force fluids

For Calcium oxalate and mixed Calcium oxalate-Calcium phosphate stone

1. Prohibit all dairy products (except butter) and foods with much milk. No milk, cream, cheese, buttermilk, condensed milk, ice cream, cream soups, milk gravies, cheese souffles, Welsh rarebits, and custards. Allow butter ad lib.
2. Keep daily consumption of citrus fruit juices (orange, grapefruit, lemon) and tomato juice to low normal limits. (to avoid large amounts of low alkaline ash).
3. Avoid *excessive* consumption of following items: reasons—high calcium 1, high alkaline ash 2, high oxalate 3. Check thru list with patient to discover any dietary peculiarities—*then forget it.* Insistence on close cooperation on foods in this long and hard to remember list will only lead to in-cooperation. (Where both calcium and oxalate are present it is extremely doubtful that absorption occurs.)

 dried fruits — apricots 2, figs 1-2-3, olives 1-2, raisins 2

 nuts—1-2-3

 Vegetables—asparagus 3, beans 1-2 beets 3, carrots 2, parsnips 2, parsley 1-3, rhubarb 1-3

 green leaf vegetables—broccoli 1, chard 2-3, collards 1, greens (beet 1-2-3, dandelion 1-2-3, mustard 1, turnip 1), kale 1, spinach 2-3, water cress 1-2-3.

 Sweets—molasses 1-2, molasses candy 1-2, treacle 1-2, maple syrup 1-3, chocolate 1-3

 Sea foods—clams 1, oysters 1, shrimp 1, salmon 1, sardines 1.

 Remember the above foods are acceptable in moderate amounts
4. Acidification with sodium acid phosphate, 0.6 grams (10 grains) 4 times daily to bring *p*H down to 6.5 or below.

For $MgNH_4PO_4$-$CaPO_4$ stone (alkaline infection)

1. Diet as above
2. Eradicate urea-splitting infection
3. Sodium acid phosphate only if urine can be acidified.
4. Basaljel plus low phosphate diet if urine cannot be acidified (see Chronic Infection with Stone).

For Uric Acid and Cystine stone

1. No dietary treatment (alkaline ash diet unnecessary)
2. Alkalinization with sodium citrate, 3 or 4 grams (1 level teaspoonful) 4 times daily to keep *p*H at 7.5.
3. Low calcium diet. No dairy products (except butter) to prevent calcium phosphate stone in markedly alkaline urine

SUMMARY

A study of urinary calculi and of the stone-forming process by crystallographic techniques (reported elsewhere) has suggested that more emphasis should be placed upon the significance of the nucleus in stone formation and prevention. Normal urine may be able to retain its dissolved salts in a 2 to 4 times supersaturated solution for a time without precipitation occurring if no nucleus is present. In the presence of a nucleus precipitation may occur whenever the saturation point of the urine is exceeded. It is desirable, therefore, to conserve, if possible, this power of urine to hold its salts in solution by preventing nuclei from forming. The nuclei of the majority of calcium-containing calculi (including calcium oxalate calculi) are composed of calcium phosphate. Measures to inhibit the formation of such nuclei may be of value in a stone-prevention program.

The underlying principle of such programs is the prevention of excessive supersaturation of the urine by stone-forming salts. This may be done by increasing the urinary volume, by decreasing the urinary excretion of the offending crystalloid, and by increasing the solubility of the offending crystalloid. The details of the various regimens are presented. Hyaluronidase therapy is also discussed.

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CLINICAL EXPERIENCES WITH TELEPAQUE * †
(A PRELIMINARY REPORT)

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Telepaque, the new cholecystographic medium, when used in accordance with patient preparation and dosage advocated by the manufacturer, produced results, which in our experience, could only be graded as satisfactory. However, the repeated occurrence of certain observations during preliminary trials prompted changes, which in our hands, have produced results better than any other procedure utilizing an orally administered drug. These changes are a radical departure from the advised patient preparation and dosage, and to our knowledge, are different from any other accepted procedures.

The details of the physical properties, experimental data, etc., of telepaque are obtainable from the manufacturer, but for convenience, a resumé of pertinent facts is offered.

Telepaque is an organic compound, containing iodine, the chemical formula for which is 3-(3-amino-2, 4, 6-triiodophenyl) -2-ethylpropanoic acid. Its iodine content is 66.6 percent. Telepaque is insoluble in water, but is soluble in dilute alkali, 95 percent alcohol, and other organic solvents. Intravenously, telepaque is slightly more toxic than other cholecystopaques, but orally the lethal dose is about four times that of the next less toxic. Comparative density studies revealed that 500 mg. of telepaque, per kilo of body weight, produced shadows equivalent to dosages of 1000 mg. per kilo of other orally administered media. This was corroborated by the studies of Morgan and Stewart. [1]

After exhaustive study, Epstein, Natelson and Kramer [2] offered three points, which they believed formed the criteria for a good cholecystopaque.

1. It should be phenolic and fat soluble in order to reach and pass through the liver.

2. It should have a carboxyl group for solubility in bile.

3. Its iodine content should be high for better opacification.

Anyone sufficiently interested in the chemical nature of telepaque will find that it compares favorably with the three points of the above criteria.

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† Materials for this study furnished by Kenneth M. Smoot, Research Department, Winthrop-Stearns, Inc.

PATIENT PREPARATION AND DOSAGE

For the routine examination, the manufacturer advises a nonfat meal before ingestion of the tablets, a standard dosage of 3 grams (6 tablets), and an absorption period of ten to twelve hours before filming. Patients are advised not to eat or drink during the absorption period. Enemas are advised for the removal of intestinal contents and gas.

In following this procedure, it was repeatedly observed, that gall bladder shadows were only of a satisfactory density and large residual accumulations of dye were consistently seen in the intestinal tract. These have been found in the stomach and at many points beyond. One of the first cases studied revealed no gall bladder shadow at twelve hours, but there was a large accumulation of the medium in the cecum and ascending colon. This patient returned twenty-four hours later for a stomach examination and exhibited a normal gall bladder outline of good density.

After this and other similar experiences, it was thought that patients were not being allowed a sufficient period of time to assimilate and store the dye. It was also possible that the advised dosage was too large, since several cases showed good density gall bladder shadows and large residual intestinal accumulations of dye. Remembering that, in the comparative density studies, telepaque shadows were markedly more dense, it was felt that even though this dosage produced no ill effects on the patient, this large dose just did not appear to be necessary.

If these deductions were correct, then dosage should be reduced, possibly it could be adjusted to a weight scale and the absorption time should be lengthened. If the absorption time was to be lengthened to, say eighteen hours, this would require the patient to abstain from food for two normal meal periods, thus adding the discomfort of hunger to the examination. It was decided that nonfat foods could be allowed in moderation, since they would produce no effect upon the gall bladder. It might also be possible that the normal digestive processes stimulated would enhance the assimilation of the drug.

Adjusting the dosage offered no particular problem. Patients were divided into three groups. Group I included all under 130 pounds and reduced dosage was placed at 1 gram (2 tablets). Group 2 included all patients between 130 and 170 pounds and dosage was fixed at 1.5 grams (3 tablets). Group 3 included all over 170 pounds and dosage set at 2 grams (4 tablets). By the same logic, which suggested this scale of dosage, it is reasonable to suggest that dosage will have to be increased beyond 2 grams for the abnormally large individual. However, to date, several patients whose weight reached or exceeded 250 pounds have been satisfactorily examined with 2 grams (4 tablets).

No specific instructions were issued as to the taking of the drug; patients were simply told that they could take the tablets singly or all at once.

Early in the study, a small group of patients began to show irregular results. This was the borderline group of those just under and those just over 170 pounds. By measurement, it was found that the short squat individual was often thicker through the filming area than the taller, even heavier person. It became immediately apparent that body thickness was almost as important as body weight, and body thickness was incorporated as an additional criteria for this borderline group. Thus, dosage was readjusted and some Group 2 patients were treated as though they belonged in Group 3 and some Group 3 patients as though they belonged in Group 2. After this change it was noted that the density of gall bladder shadows became more uniform.

It was thus that a routine of patient preparation and dosage was arranged. Simply stated it is as follows: Patients are questioned as to diet. If they have been given one, they are instructed to follow it during the day preceding filming. If not, they are instructed to eat whatever they desire. The patient is given the

exact number of tablets according to his grouping and instructed to take them eighteen hours before the filming time scheduled the next day. For the two meals inevitably included during the absorption time, a list of nonfat foods is given, from which the patient may choose his meals. Patients are cautioned as to overeating, especially in the mornings, because of the fat meal they will have to ingest in order to complete the examination. Water and soft drinks are not restricted, alcoholic beverages are.

SIDE EFFECTS

It is not the purpose of this paper to list in detail the number and frequency of side effects resulting from the ingestion of telepaque. Suffice it to say, the infrequency of side effects noted is comparable with other reported studies, namely:

A greater number of patients were asymptomatic.

Diarrhea was markedly reduced. It is to be stated, however, that telepaque does appear to have a definite laxative action. This may often appear as late as thirty-six hours after ingestion of the tablets. Most patients will report a definite change in bowel habit, whether it be a softened, loose, or watery stool, or even an increase in number of stools. Frank diarrhea, however, is rare.

Nausea and pyrosis were reduced. None of the patients examined reported vomiting. Dysuria, headaches, flushing, and other effects were infrequent.

RESULTS

Observations made from the films warrant comment. All known variants of technique were tried with variable results. Reported visualization of ducts with large dosage and short absorption time was unsuccessful in our hands. Patient preparation and dosage as advocated by the manufacturer was only satisfactory.

Following the previously described patient preparation and adjusted dosage, gall bladder shadows have shown greater opacification. This compares favorably with the manufacturer's claims and other published studies. Densitometer readings were not made in this study, but from the films alone, density and sharpness of outline were noticeably increased.

In addition to the denser gall bladder outline, the normal "s" shaped curvings of the neck, the cystic duct and less frequently the hepatic duct were visualized.

Visualization of the ducts has been a more frequent occurrence in the thin and medium individuals and has seldom occurred in the heavier built persons. In the thin and medium built individuals the gall bladder is seen to hang downward toward the right and the ducts course upward then downward toward the left, while, in the heavy individual the gall bladder and ducts follow a more horizontal course. When the thin and medium individuals are positioned for filming it is seen that the gall bladder and ducts are more perpendicular to the examining rays, while in the heavier person the course is more parallel. This condition of habitus alone, added to the poorer quality films obtained in the heavy group forms a reasonable explanation for the failure of visualization of the ducts.

A frequent objection by examiners is that the greater opacification with telepaque obscures small stones. This may be true, but in the questionable cases, a slightly overexposed film should clear up any doubt as to the presence or absence of stones.

It is well to remember that the concentration of telepaque in the gall bladder increases the specific gravity of bile. This is sufficient to cause small stones to float up and sometimes not to be observed if they become crowded in the curvings of the neck. This was beautifully demonstrated in the studies of Kirklin, which he reported in the Rigler lecture in 1952.

Patients, in whom a gall bladder has visualized, often report twenty-four hours later for additional roentgen studies. In all of these, it has been noted that the gall bladder has revisualized even if evacuation has been complete in response to fat meal. This second visualization is

often of satisfactory to good density and often beautifully demonstrates the relationships of the gall bladder especially if the stomach and duodenum have been barium filled.

NONVISUALIZATION

In following the revised patient preparation and adjusted dosage, nonvisualizations began to occur with sufficient frequency to become a disturbing factor, especially when the patient has reported a minimum or no side effects and no residual dye could be discovered in the intestinal tract. It is a well known fact, that a gall bladder will often spontaneously evacuate itself. Whether this has happened during the prolonged absorption period, or telepaque with its known laxative effect, and higher specific gravity may have induced evacuation, or the patient has ingested something which has caused evacuation has not been determined.

These nonvisualizations have been sufficiently frequent to force an addition to the routine of examination. In all cases of nonvisualization the patients were instructed to continue on the nonfat diet they had received. An additional dose of telepaque was given with instructions to take the tablets eighteen hours before refilming the following day. It was felt the additional dose of telepaque was merely a precautionary measure, to replace any of the dye lost through the processes of normal elimination, because experience has shown that gall bladders revisualize as a rule, and this additional dose may be entirely superfluous. Experience to date is too small to be conclusive.

Upon return of the patient the following day, more often than not a gall bladder outline is seen, fat-meal is administered and its function reported. If, however, on the second day the gall bladder remains invisible, it is felt, that after these two attempts, it is safe to report the gall bladder as nonfunctioning.

All of us are aware that telepaque, like all new drugs, is still under observation. Even after a year of trial and several hundred examinations it is felt that standards for examination with this media have not been set, even though it appears to produce results superior to other orally administered cholecystopaques.

CONCLUSIONS

The only conclusions warranted at this time are:—

1. Side effects, from the ingestion of telepaque at the suggested dosage, are so slight as to render this an innocuous procedure.

2. More satisfactory results have been obtained utilizing the eighteen hours absorption period. Shorter times have not proven satisfactory in our hands.

3. It is still a question whether the ingestion of nonfat foods materially interferes with or enhances the routine of examination.

4. In cases of nonvisualization, the additional dose of telepaque, with refilming in twenty-four hours has been invaluable in the determination of the function of the gall bladder.

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DISCUSSION

Dr. Joseph P. Tomsula (Baton Rouge): Drs. Brierre, Hunt and Landry are to be complimented not only for critically assaying but also for tailoring a new product to individual usage. We are too often prone to accept the carefully selective results of larger centers without question or variation until we suddenly realize that our own results do not compare. Patients may or may not be comparable but techniques can and do vary.

Dr. Francis Spencer from San Angelo, Texas, did report dosage fluctuation in the August 1952 issue of Gastroenterology but he did not carry it to the program adherence we have had outlined

this afternoon. Practically all writers comment upon the dye residue within the colon. None appear to regard it as a great hindrance to gall bladder visualization. Yet one can gather that all would feel better if it were not there. This implied wish makes the efforts of our own colleagues even more propitious.

During August and September of 1952, all of our gall bladder patients (40) at Our Lady Of The Lake Hospital were divided so that one received telepaque—the next a double dose of priodax. A maximum of side effects can and do occur with the above priodax regime. By comparison the 3 gram or 6 tablet dosage of telepaque was remarkably free from side effects. Additionally, the gall bladders were much better visualized. We made no attempt to vary from the 6 tablet regime. All our radiographic studies were taken within twelve to fifteen hours following ingestion of the drug. All received a synthetic fatty "meal" after the preliminary films were seen and the postcibum studies were then taken thirty to forty-five minutes later.

From its initial usage through April 1953, 277 of our patients have received this drug. If the gall bladder did not visualize with the use of telepaque, the patient was given a double dose of priodax. We have had none visualize with priodax if it did not do so with telepaque.

It is an unusual occurrence not to see the cystic, and at least a portion of the common duct, in small and average sized patients on the postcibum studies. With large individuals this incidence is reduced but is not always absent. We have also had an excellent correlation of radiographic and surgical findings.

I want to thank Drs. Brierre, Hunt and Landry for a very timely and worthy presentation. Perhaps we should also thank them for proving that we as individuals in the practice of radiology can assay a new product and contribute to the knowledge of its safe everyday usage.

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BRONCHOGENIC CARCINOMA A DIAGNOSTIC PROBLEM

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INTRODUCTION

We are all aware that given an early case of carcinoma of the lung one can affect a cure by pulmonary resection. This has been proven many times since Graham's successful resection in 1933. The problem that is greatest is accomplishing a diagnosis early enough to be able to resect with the hope for cure. In this study we propose to analyze the difficulties in arriving at a diagnosis of carcinoma of the lung, and particularly to study this problem in our own community; and, furthermore, to see what can be done to bring these lesions to earlier surgery. The first pulmonary resection for carcinoma of the lung was not done until 1948 in our community. We believe that we have progressed since then and should be able to detect cases earlier. But, can we?

We have tried to be cancer conscious with all of the pulmonary lesions presented to us and have encouraged our colleagues to do likewise. Nevertheless, in our local hospitals the story is identical to that in hospitals all over this country and in other countries all over the world; the incidence is increasing but the resectability and curability rates remain about the same.

There seems to be little doubt that carcinoma of the lung is increasing; in fact, some suggest that it is increasing more rapidly than any other type of cancer. In this country during the decade ending in 1948, deaths from lung cancer increased 144 per cent in contrast with an increase of only 31 per cent in deaths from all types of cancer. The cause of this increase is not a purpose of this thesis and will be left to the centers where large series of cases are studied. At the Hines Veterans Hospital the period covering 1931 through 1936, the percentage of cancer admissions due to carcinoma of the stomach remained relatively stable at about 5 per cent while that of carcinoma of the lung increased 2 per cent to 12 per cent.

The disease is seen predominantly in the male sex, the ratio being approximately 8 to 1, and most commonly in the fifth, sixth, and seventh decades. The locations of the lesion are approximately 50 per cent in the upper lobes. More lesions are seen on the right than on the

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left which is probably accounted for by the difference in size of the two lungs. Pathologically, approximately one-half of the resected carcinomas of the lung are squamous cell, about one-third are undifferentiated cell carcinomas, and about one-sixth are adenocarcinomas.

The onset of respiratory tract carcinoma is always insidious and misleading as evidenced by one of our cases that began with multiple superficial thrombophlebitis. However, the leading symptom reported in all series is that of cough. We have come to believe that cough is probably the most important symptom, i.e., the persistent cough that remains after an upper respiratory infection in the nonsmoker and the change and increase in intensity in the cough of a smoker. In the Brompton Hospital series the early symptoms in order of the frequency were cough, pain, dyspnea, hemoptysis, febrile illness lassitude and combinations of the six above. The average duration of symptoms is usually from nine months to a year before consulting a physician. The average duration of symptoms in our cases was approximately one year. Hemoptysis is the one symptom which will induce the patient to consult a physician without delay. It would be helpful if all carcinomas of the lung would bleed early, and therefore, cause the patient to seek medical counsel. Unfortunately, as in all other carcinomas, bleeding is sometimes a late symptom or is not seen at all. In our cases about 18 per cent had hemoptysis as an early sign. Early diagnosis of carcinoma of the lung is dependent upon the index of suspicion of the physician. All negative lesions seen on x-ray should be thoroughly investigated. The value of bronchoscopy is limited; approximately 20 to 30 per cent can be seen on bronchoscopy. The number of positive diagnoses can be increased still further with cytological studies of sputa and bronchial washings. The use of bronchograms and planograms often aid the roentgenologists. However, approximately one-third of all pulmonary lesions must be explored without a positive preoperative diagnosis.

CASE REPORTS

Case No. 1: Mr. W. 68 year old white male. Onset was manifested by persistent cough, pain in right chest, and fever. The first x-rays revealed right upper lobar pneumonia. He improved on antibiotics, but his chest x-ray did not completely clear. Bronchoscopy and bronchial washings were negative. He was not offered an exploratory thoracotomy. He returned five months later and upon exploration he was nonresectable.

Case No. 2: E. W. 62 year old colored male. Onset was manifested by cough and fever. The first chest x-ray showed a pneumonitis in the left midlung zone. The radiologist suggested that this might be secondary to a mass lesion. With penicillin the patient improved but did not heed his physician's warning. Four months later the patient was asymptomatic. Routine retirement chest x-ray was taken and a mass lesion was seen in the left upper lobe. With the Broyle's bronchoscope the left upper lobe orifice was now seen to be closed, suggesting a tumor. Bronchial washings failed to show malignant cells. A pneumonectomy was done and in the lumen of the left upper lobe was a squamous cell carcinoma, well localized and obstructing the lumen.

Case No. 3: Mr. S. 58 year old white male. This patient was being followed by means of x-ray because his daughter had recently died of tuberculosis. He denied any symptoms except pain in his right shoulder and arm. X-ray of September 12, 1949, showed some haziness of both apical regions of questionable activity. Films of January 6, 1950, showed increased haziness appearing in the right upper lung field. Films on May 4, 1950, were more definite, and one year later the lesion was quite definite and was still being called tuberculosis with never a positive sputum for acid fast bacilli. In November 1951, we saw the patient for the first time; bronchial washings revealed malignant cells and pneumonectomy was done. Pathological section showed mixed adeno and squamous cell type of carcinoma arising from the right upper lobe bronchus.

Case No. 4: 54 year old colored male, who was followed as a probable tuberculosis case for six months with never a positive sputum for acid fast bacilli. At operation he was inoperable and died three months later of metastasis.

Case No. 5: Mr. W., age 52. Onset of cough, hemoptysis, and a diagnosis of tuberculosis was made without a positive sputum. The patient was treated with streptomycin, etc. One year later bronchoscopy showed marked narrowing of the left main stem bronchus. However, biopsy was negative. The patient refused exploratory

surgery. Eighteen months later the diagnosis was obviously carcinoma; the sputa cytology was positive and the patient had evidence of large nodules in the liver. He died one month later.

The lesson here is never to accept an x-ray diagnosis as an etiological one. X-ray shadows are only suggestive and must be substantiated by laboratory and clinical findings.

Case No. 6: Mr. F., white male, 68 years of age. Presenting symptom was hemoptysis which lasted two or three days. On bronchoscopy a positive biopsy was obtained. Surgery was advised to the patient through the patient's physician. Surgery was refused at this time. The patient returned ten months later and was obviously inoperable.

It is our belief that if properly explained to a patient that he has carcinoma, and that his only hope for survival is through surgery, none will refuse operation.

Case No. 7: Mr. M., age 41. Illness began with abdominal pain, and an emergency appendectomy was done on June 8, 1951. One month later he returned with pleural effusion following upper respiratory infection. Repeated thoracenteses were done and cytological studies failed to make a positive diagnosis. Repeated sputa were studied for acid fast bacilli and tumor cells. The pleural effusion continued to recur, and in November 1951, the patient presented a painful swelling of the right costal margin. On exploration of this lesion the posterior rectus sheath was found to be thickened and hard, and a frozen section showed a squamous cell carcinoma. Upon thoracotomy a tumor was found arising within the right lower lobe with marked spread throughout the pleura and pericardium.

Case No. 8.: Mrs. F., 52 year old white female whose presenting symptoms were fever, malaise, and pain in the left chest. She developed a left pleural effusion which was aspirated and was negative for acid fast bacilli and tumor cells. Her symptoms progressed, and six months later she was admitted to a tuberculosis sanatorium. The x-rays were quite suggestive of tuberculous pericarditis. Repeated laboratory studies failed to produce an etiological diagnosis, and on May 19, 1952, the chest was explored through a trans-sternal incision. The pericardium presented a thick sheath of carcinomatous infiltration. There were firm carcinomatous nodules throughout both lower lobes.

The problem which is presented by cases No. 7 and No. 8 is this: Should unexplained pleural effusions be explored?

Case No. 9: 62 year old white male with severe cough for four or five months and hemoptysis. Positive biopsy at bronchoscopy was obtained. The patient has been well three and a half years now.

Case No. 10: Mr. A., 65 year old white male, who presented symptoms of cough, severe dyspnea, and cyanosis. After work-up a carcinoma of the left lung was suspected but was not proven; however, the patient had too little respiratory reserve to warrant exploration. He was cyanotic lying in bed. Two years later he returned with the same symptoms and an obvious carcinoma with a positive bronchoscopic biopsy. He was operated upon by another surgeon and died during surgery.

The interesting thing shown here was that the lesion could be followed by x-ray for over four years but yet the patient always had too much emphysema, etc. to warrant an operation.

Case No. 11: Mr. L., 50 year old white male who presented himself because of persistent cough. He was told that he had a very long uvula and that it was tickling his throat. A uvulectomy was done. His cough persisted and subsequently he had hemoptysis. He was then sent to a chest center where on work-up the diagnosis of carcinoma of the lung was made and palliative pneumonectomy was done.

Case No. 12: Mr. D., 70 year old white male who had onset of cough and pain in his left chest. He was seen by his physician who made a diagnosis of virus pneumonitis. We saw this patient later; he had many sputa examined for cytology, fungi, and acid fast bacilli. Bronchoscopy and bronchial washings were negative. The chest pain persisted but his x-ray did not change. The patient was scheduled for exploration, but it was cancelled because it was felt that there was insufficient evidence to warrant thoracotomy on a man this age. Two months later a Bucky film showed erosion of the ribs over the site of pain. A biopsy of the ribs proved to be epidermoid carcinoma. The onset is often so insidious that it fools even those who are constantly on the lookout for these lesions.

Case No. 13: Mr. O., 50 year old white male whose complaint was lassitude. He had no cough, had occasional vomiting, and had lost approximately 10 pounds of weight in the past three months. X-ray showed a mass lesion. Bronchoscopy and cytologic study of sputa were negative. On exploration, the hilum was frozen and the lesion was not resected.

The sad feature of this story is that the patient was hospitalized some six months previous to this film for a tonsillectomy. A chest film was not made. Now, however, a photofluorogram of the chest is made routinely on all admissions to this hospital. It is probable that the lesion could have been seen six months earlier and could have been resected at that time.

Case No. 14: 54 years old white male whose presenting symptom was thrombophlebitis of the

left lower extremity in November 1952. He had hemoptysis at this time which was explained on the basis of pulmonary embolus, and quite reasonably so. X-rays of the chest at this time showed increased hilar markings on the left. In March 1953, four months later, the patient was seen as a diagnostic problem because of multiple thrombophlebitis in all extremities, involving both the superficial and deep veins. The repeated hemoptysis had continued and the patient was coughing. Cytology of sputum at this time showed positive carcinoma cells. A supraclavicular node was palpated and proved to be positive on biopsy. X-rays of the chest at this time showed an obvious tumor that in retrospect could be seen in the first films at the onset of his illness.

This case is presented to further substantiate how varied the onset of signs and symptoms of pulmonary carcinoma can be and therefore warrant a complete work-up on all cases.

SUMMARY

From this survey it is obvious that there is a need for education of the public and a greater awareness on the part of the physician regarding the frequency of the disease, its early consideration in any patient with pulmonary pathology, and the necessity for making an etiological diagnosis in all lesions of the lung.

In this group of cases the problems of pleural effusion, persistent chest pain, recurrent pulmonary infection, confusion with tuberculosis without positive diagnosis of either disease, and incomplete work-up as evidenced by the patient with uvulectomy are presented.

In order to discover tumors in the asymptomatic stage and to increase the salvage rate the value of mass chest surveys has been amply demonstrated in the reports of Overholt and co-workers. In their series of 35 malignant lesions found on chest survey all were resectable and 75 per cent showed no evidence of lymphatic spread as compared to Ochsner's cases (that were not found on chest survey) in which 35 per cent were resectable and only 10 per cent had no evidence of spread.

It should be stressed that every male past the age of 40, and especially the heavy cigarette smoker, should have an x-ray of his chest every 6 months. Also a small chest film should be made routinely on every hospital admission, when practicable.

In all patients with unexplained pulmonary lesions, exploratory thoracotomy should be seriously considered.

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OBSERVATIONS ON THE USE OF TELEPAQUE; A NEW CHOLECYSTOGRAPHIC MEDIUM

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SHREVEPORT

During the past three years there has been considerable interest in the newer radiopaque media for oral cholecystography as evidenced by the large number of reports in the literature concerning the use of priodax, * monophen, † teridax, * and telepaque. ‡ Priodax has been in use since 1941, and was the first oral cholecystographic medium used which rarely caused any unfavorable reaction in the patient. [2] Monophen has been available for general use since 1944, and while it, too, is a satisfactory medium, [3] its main disadvantage is the size of the capsule which many patients find difficult to swallow and less convenient than the tablet form.

* Schering Corporation, Bloomfield, New Jersey.

† National Synthetics, Inc., 270 Lafayette St., New York 12, New York.

‡ Telepaque for this study was supplied by Kenneth M. Smoot, Southern Division, Department of Medical Research, Winthrop-Stearns, Inc., 111 South Jefferson Davis Parkway, New Orleans, Louisiana.

Priodax and monophen contain 51.5 percent and 52.2 percent firmly bound iodine, respectively, and following ingestion from 50 to 95 percent of the chemically unchanged medium is excreted in twenty-four to forty-eight hours, mainly by the kidneys.

Recently two new preparations have appeared on the market, namely: Teridax,[4] which contains 65.5 per cent iodine by weight, and telepaque,[1,3,5] containing 66.68 per cent iodine. Teridax is readily absorbed from the gastrointestinal tract and excreted principally by the kidneys. Radiopaque material in the colon from unabsorbed dye seldom occurs following its use. It is reported to be well tolerated and has a low level of undesirable reactions. In our experience, visualization of the gallbladder afforded by teridax is considerably less than when telepaque is used. The greatest degree of radiopacity of the gallbladder occurs with the use of telepaque in doses of 2 to 3 grams, depending upon the weight of the patient. It is eliminated mostly by the gastrointestinal tract and to some extent by the kidneys, which accounts for the high incidence of unabsorbed dye in the right colon. This rarely interferes with interpretation, however, and has the advantage of positive evidence that the patient has ingested the gallbladder medium as directed. In the rare case in which it does interfere, this can be corrected by the use of a sodium bicarbonate enema, as telepaque is soluble in dilute alkalis, and by compression spot film radiography to be described later.

During the past two years we have used telepaque for examination of the gallbladder in over 300 cases. The first 50 cases were interviewed for any evidence of unfavorable side effects. In every case, the examination was done to rule out or confirm suspected gallbladder disease. Of these first 50 patients, 1 had nausea, vomiting and skin rash several hours following ingestion of the drug; 2 patients had nausea alone; and only 1 patient reported diarrhea. We have been very much impressed by the low degree of toxicity of this drug. It produces excellent visualization of the galibladder and occasionally demonstrates the biliary ducts. The youngest patient thus far examined by us was 2 years of age and weighed 26 pounds.



Figure 1.—Normal gallbladder showing excellent visualization using telepaque. The common bile duct and a portion of the duodenum are seen medially.

He received 2 telepaque tablets (1 gram) which produced excellent visualization.

The technique of the examination is as follows: A fat-free evening meal is given and after the meal telepaque tablets are swallowed one at a time five minutes apart with sips of water. Others[3] allow the tablets to be taken with the evening meal and report excellent results. The patient is allowed small amounts of water until midnight, then nothing by mouth until the radiographic examination is made. Twelve hours following ingestion of the tablets the first two routine views are taken, one in the posterior-anterior recumbent position and the other in the left anterior-oblique upright position. These films are then developed and viewed before proceeding with the examination. If the gallbladder is well defined with no overlying gas or radiopaque residue in the colon, a fatty



Figure 2.—Excellent visualization of the gallbladder in the posterior-anterior recumbent position. No evidence of calculi in this projection.

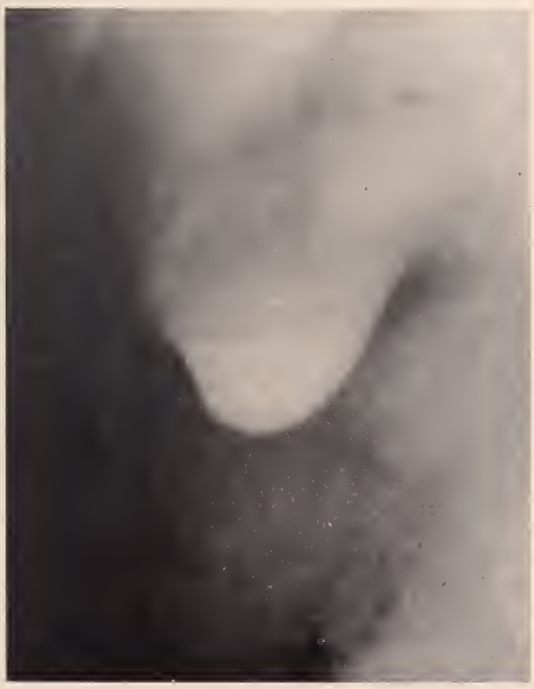


Figure 3.—Same case as Figure 2, taken in upright oblique posterior-anterior projection. Note layer of tiny radiolucent calculi which would have been missed had this position not been used.

meal consisting of 4 oz. cholex (or cholestim) and water is then given and the post cibum film taken thirty minutes later in the posterior-anterior recumbent position.

The reason for using this type of fatty meal is that it does not interfere with barium study of the stomach and duodenum immediately following the cholecystogram. We are of the opinion that the post cibum film, used by many as an index of gallbladder function is of little value since



Figure 4.—Multiple radiolucent filling defects in a well visualized gallbladder. See Figure 5.

many pathological gallbladders will show good response and normal ones fail to respond. Its chief value is that of an additional film which often shows greater dye concentration than is present before a fatty meal is given and occasional visualization of the biliary ducts.

In the event the gallbladder is partially obscured by gas or colon contents, compression spot film radiographs using high voltage (85 KV) in multiple projections are taken. The greater density produced by telepaque makes visualization of the gallbladder by roentgenoscopy relatively simple and high voltage technique allows one to "see through" the gallbladder shadow in



Figure 5.—Upright high voltage spot film radiographs of same case as Figure 4, showing no change in position or filling defects. Diagnosis of polyposis made. Surgical specimen showed polypoid collections of cholesterol adherent to gallbladder wall (cholesterolosis).

the same manner that high voltage technique allows one to visualize polyps in the colon. The routine upright projection is indispensable as numerous cases of small calculi will be demonstrated by "layering" or strata formation in this manner, and will not be visualized in the recumbent position.

CONCLUSION

The increased iodine content of telepaque has made it the most satisfactory cholecystographic radiopaque medium we have thus far used. It is of low toxicity and produces excellent visualization of the gallbladder. High voltage compression spot film radiography, in our opinion, will eliminate the masking effect of increased radiopacity produced by this medium and has the added advantage of displacing gas containing loops of bowel away from the gallbladder.

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SOME USES OF PANTOPAQUE MYELOGRAPHY * †

GEORGE A. SHIPMAN, M. D. ‡

NEW ORLEANS

In 1918, Dandy [5] suggested that the spinal cord and its investments could be studied by the replacement of spinal fluid with air. Three years later, French investigators, Sicard and Forestier, [27] had substituted lipiodol for air. Since lipiodol proved to be a mild irritant, a number of other substances were tried. In about 1941, pantopaque was introduced [20, 24] and has become increasingly more popular in the United States. It rarely causes any serious complications, has sufficient density for good contrast, and is of suitable viscosity and specific gravity for even flow within the subarachnoid space. The purpose of this communication is to discuss some of the applications of pantopaque myelography.

PRELIMINARY STUDIES

Preliminary to the performance of myelography, good diagnostic plain films of the portion of the spine to be investigated should be secured in AP, lateral and oblique projections [3, 26]. Careful study of these will provide information regarding the alignment of the spine, and the integrity of the bodies, neural arches and disc spaces. Recognition of congenital anomalies and posterior degenerative spurs is of paramount importance, because

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failure to do so may lead to mistaken diagnoses or to operation at the wrong level. Preliminary films should always be compared with the films made at the time of myelograms [13]. Before operative procedure, consultation of the surgeon and roentgenologist to correlate the clinical and roentgen findings is invaluable in arriving at a more accurate preoperative diagnosis and a mutual understanding of significance of anatomical variations.

INDICATIONS

Camp's [3] list of indications for myelography leaves little to be desired. Briefly, he believes myelography is indicated (1) to determine the presence and type of a lesion when clinical evidence is uncertain or indefinite, such as differentiating a tumor from a degenerative disease; (2) to establish the exact level and type of lesion, thereby facilitating laminectomy of limited extent when there is clinical evidence of a lesion; (3) to exclude possibility of multiple lesions when only one is suspected; (4) to determine the cause of symptoms in patients who have had previous laminectomy; and (5) to establish presence or absence of lesions in medicolegal cases. In addition, myelography should be done to rule out an extruded disc in areas before operative bony fusion is performed. Since the procedure is relatively harmless, there seem to be no real contraindications. Malaise, low grade fever, occasional meningismus, and post-tap headaches sometimes occur following myelography but subside promptly.

TECHNIQUE

Accuracy of the procedure is dependent on proper technique. Many methods have been devised, but the one outlined by Wood [26] is highly satisfactory, with slight modification. His method uses a team consisting of a neurosurgeon or surgeon who performs the lumbar tap and other maneuvers requiring sterile technique, and a roentgenologist for the fluoroscopy and roentgenography. Preoperative sedation may be given routinely or reserved for the apprehensive patient. The spinal tap is performed on the fluoroscopic table which should be capable of being tilted either direction at least 45°. The tap is done at least one interspace above the suspected lesion to avoid confusing needle defects in the pantopaque column. Local anesthetic is used to infiltrate the skin and soft tissue at the level of the tap. A No. 18 or 19 spinal needle with a blunt bevel appears to lessen the incidence of subdural injection or formation of bubbles of oil within the subarachnoid space. If multiple attempts to enter the subarachnoid space are necessary it is probably better to postpone the procedure for about ten days because the subarachnoid membrane is almost certain to be lacerated sufficiently to produce subdural collections of spinal fluid, blood, or pantopaque which will interfere with the accuracy of interpretation. When free flow of spinal fluid from the needle occurs, manometric studies may be made if desired. Six to 10 cc. of cerebrospinal fluid are then replaced by 6 cc. of pantopaque for lumbar or dorsal studies, or by 9 cc. for cervical studies. If the oil does not flow into the canal easily, only 1 cc. should be injected until fluoroscopic observation proves that oil passes freely along the subarachnoid space. If the oil remains fixed, it is, most likely, in either the subdural or epidural space and should be withdrawn, if possible, and the examination postponed for about two weeks to allow for absorption of the oil.

After injection of the oil, the stylet is placed in the needle and covered by a sterile dressing. The dressing may be secured by a sterile rubber band. The patient is then placed in prone position on the tilt table, and the foot of the table depressed sufficiently to pool the oil in the cul-de-sac. Careful fluoroscopy is performed, gradually changing the tilt of the table so that the head is depressed and the oil flows upward to whatever level is indicated. When cervical lesions are suspected, care is exercised to keep the head and neck in marked hyperextension to avoid the oil entering the skull. Once oil is in the ventricles, it cannot es-

cape. Routinely, spot films are made in AP and oblique projections at the levels where lesions are suspected clinically or fluoroscopically. Prone lateral films are made with the overhead tube at these levels also. Inspection of the neural canal well beyond the limits of the suspected lesion is always indicated; otherwise, numerous lesions will be overlooked. On occasion where there is complete block below, oil may be introduced by cysternal puncture to determine the length of the lesion.

After films have been inspected and found satisfactory, the dye is pooled beneath the needle fluoroscopically and withdrawn. Repooling and maneuvering of the needle may be necessary, but, usually, almost all the oil can be withdrawn readily. Scrupulous attention to the details of technique and adequate dark adaption of the eyes of the fluoroscopist is essential to successful myelography.

SOURCES OF ERROR

Deviations from a standard technique are the most common causes of mistaken diagnoses of myelographic studies. Some of them have been discussed in the section on technique and will only be mentioned here:

1. If less than 6 cc. of oil is used, [3, 7, 25, 26] skipped areas in the oil column will lead to diagnosis of a lesion where none exists. Recently, some investigators [1, 15] have advocated the use of enough oil to fill the canal completely up to the level of L-1. Their preliminary results have been very promising and further work should be done.

2. Failure to postpone the myelogram after multiple perforations of the arachnoid membrane have been made in an attempt to get the needle into the subarachnoid space causes pseudodefects from spinal fluid leaks or hemorrhage. Sometimes these multiple lacerations lead to a double column [16, 26] of pantopaque in both the subdural and subarachnoid spaces which makes film analysis very difficult.

3. Myelograms following a spinal tap, done within the previous ten days, may show needle defects [16].

4. Failure to examine the spinal canal well beyond the area of suspected lesion, or failure to rotate the patient into the oblique positions, may result in missing small or multiple lesions [2, 12, 26].

5. A professional source of error is the failure to inspect preliminary films for anatomical variations or pathological abnormalities [3, 26]. Six lumbar vertebrae, spondylolisthesis, kyphosis, posterior degenerative spurring, can and do alter the findings. Careful consultation between surgeon and roentgenologist often results in avoiding unnecessary operations or operations at the wrong level.

6. Previous operations on the spine or previous myelograms may confuse the findings due to change in oil column secondary to operative defects or arachnoiditis [3, 4].

7. Unusually narrow or short neural canals may appear normal where laterally extruded discs do not impinge upon them [2].

ANATOMY

Analysis of myelographic findings is based on a thorough understanding of the anatomy of the neural canal and its contents [25]. The walls of the neural canal are composed of the bodies and neural arches of the vertebra and their connecting ligaments. Within the canal are a series of long cylindrical compartments. The spinal cord itself lies suspended in the middle from the hind brain and from denticulate ligaments. The cord is covered by a thin membrane—the pia mater. Two other thin membranes lie between the pia mater and the bony canal. The most central of these is the subarachnoid membrane and the outer one is the dura mater. Between the dura and the bony canal is the epidural space which is filled with connective tissue, blood vessels, and lymphatics. Between the dura and the arachnoid membrane is a very thin potential space called the subdural space. It contains a thin film of cerebrospinal fluid. Between the arachnoid membrane and the

pia mater is the subarachnoid space filled with cerebrospinal fluid. The spinal cord itself extends from the hind brain to the level of L-2 where it is divided into a number of spinal nerve roots which emerge from the spine at lower levels through the intervertebral foramena. Above this level the spinal nerves branch off in pairs to pass laterally out of the spinal canal. The canal is widest in the cervical region and narrowest in the dorsal area.

NORMAL MYELOGRAPHIC FINDINGS

Normal myelograms reflect findings that one would expect from the anatomy. The oil column ascends with smooth borders along the neural canal with short branches flaring smoothly and symmetrically outward along the nerve sheaths as they depart from the canal. The spinal cord can often be seen in the central portion of the column. Differences in size of the various portions of the spinal canal and cord are reflected on the films. The cul-de-sac is variable in its shape and how far distally it extends. This fact sometimes leads to diagnostic errors if it is not fully understood.

LESIONS REFLECTED BY MYELOGRAPHY

Lesions of the neural canal can be divided into three main types; medullary (involving the spinal cord), extramedullary intradural (involving the dura or arachnoid membranes), and extradural (involving the epidural space). The findings in each instance are those that could be predicted from a knowledge of how the lesions alter the normal anatomy. Brief discussion of the main lesions of each type will be presented along with a description of the typical myelographic findings.

Intramedullary lesions represent about 10 per cent [26] of all the neural canal tumors. Most of them are gliomas, about 70 per cent of which are ependymomas and most of the remainder astrocytomas. Most ependymomas are slow growing and may become so large that they produce pressure atrophy of the nearby neural arch. On the plain film, the interpedicular measurements may be increased and the posterior border of the vertebral bodies scalloped. The tumor may extend along the cord for a distance of several segments. Astrocytomas are usually smaller and more rapid growing. Myelography reflects the tumors by showing an expanded cord [3, 12, 26]. In the cervical and dorsal areas, frequently it may completely obliterate the dural sac so that the pantopaque tapers away from the midline bilaterally. Cauda equina tumors may completely block the canal and only a smooth border be presented from below. Smaller ones reveal only irregular filling defects among the nerve roots. Other tumors which are occasionally found within the cord are oligodendromas, hemangiomas and hemangioblastomas, fibromas, lipomas, dermoids, terratomas, etc.

Extramedullary intradural tumors constitute about 60 to 70 per cent of the neural canal tumors [26, 27]. They are about equally divided between meningioma and neurinomas [6]. Meningiomas are most frequent in the dorsal cord and more frequently in females. Rarely do they erode the bone or produce sufficient calcium to show on the plain films. These are firm tumors, apparently arising from the dura along a broad base and indent and compress the cord. This is reflected myelographically as a smooth indentation on a compressed cord. The change is readily recognized on the PA film when the tumor is laterally placed or on the lateral projection when it is anterior or posterior. Below the level of the cord, the nerve roots are displaced. If complete obstruction is encountered, the tumor is well outlined because of the intimate contact with the oil.

Neurinomas arise from the nerve sheath and are seen in any portion of the cord [26, 27]. They are seen in younger patients than are meningiomas and in about the same proportion in both sexes. Bone changes are more frequent in neurinomas than meningiomas but do not occur until quite late. Some of these tumors pass through the intervertebral foramen into the paraspinal area. Thus a paraspinal

mass and an enlarged intervertebral foramen are typical findings when present. Myelographic findings are essentially the same as those of meningioma.

Other tumors in this group include neurofibromas, dermoids, lipomas and metastatic gliomas.

Extradural tumors are chiefly malignant, the primary ones arising from any of the extradural components or from the nerve roots outside the dura. Metastatic extradural tumors are more common, however, and arise chiefly from the breast, bronchus, or lymphomas. Some of them spread directly from bone metastases. The myelographic findings usually are a long, extensive, smooth indentation passing over several segments with the greatest indentation at the midportion of the defect. If there is complete obstruction, the subarachnoid space tapers off to the point of obstruction. Benign extradural tumors present essentially the same findings.

RUPTURED INTERVERTEBRAL DISC

One of the most controversial topics in myelography is that of ruptured intervertebral disc. Many [9, 17, 18, 21] believe that clinical diagnosis of disc is more accurate than myelography. Estimates as to myelographic accuracy vary from about 60 to 95 per cent [14, 18, 21, 22, 26]. With accumulating experience and with strict attention to the technical part of the examination during the past ten years, myelographic accuracy has gradually risen with both the so-called "false positives" and "false negatives" diminishing. Shipman and Vogel [22] reported 92.7 per cent accuracy in a series of 85 consecutive operatively proved cases using 6 cc. of pantopaque. A previous series of 74 performed with only 3 cc. was about 84 percent accurate.

Study is now being carried out using first 3 cc. and then 6 cc. on the same patient at the same examination to see if this percentage difference is sustained. The surgical member of the team found it was occasionally difficult to determine the preoperative clinical diagnosis from the chart. He stated that when disc was suspected at myelography and not immediately found at routine laminectomy, it was sometimes found after more extensive removal of lamina. It appears that clinical findings and myelography are a supplementary, not a competitive, means of diagnosis. Need for teamwork, therefore, has been accepted at some of the larger neurological centers where myelography is always included in cases of suspected protruded disc. [10, 14, 19]

The protruded disc usually produces a localized indentation in the oil column at a disc space. The canal itself may appear normal but a variation in the symmetry of filling of the neural sheaths suggests a protruded disc. Very minor changes in the column must be carefully correlated with clinical and plain film findings. Large discs show ventral defects on the lateral film. The main differential diagnosis in extruded disc is that of posterior degenerative spur of the vertebral body. It also creates a localized ventral indentation at the disc space level. Careful study of the myelographic and plain films will aid in differentiation except where both lesions are present. Multiple discs are said to be present in from 2 to 10 per cent of cases [3, 25].

Occasionally, postoperative cases or cases in which previous myelograms have been performed are referred for myelography. Some of these have arachnoiditis following the previous procedures. Myelographic findings are usually characteristic, forming irregular distribution of the pantopaque in multiple pockets in the involved areas.[3]

Many other lesions can be demonstrated by myelography but will not be discussed. Findings are about what one would expect in varicose veins of the cord, cord atrophy, Arnold-Chiari syndrome, meningoceles, and epidural infections.[26]

SUMMARY AND CONCLUSIONS

1. Pantopaque myelography has been progressively more popular and increasingly more accurate since its introduction in 1941.

2. Accuracy in diagnostic analysis is largely dependent upon strict adherence to

meticulous technique and skilled teamwork in performance of the examination.

3. Insufficient pantopaque and multiple lacerations of the arachnoid membrane appear to be most frequent errors in technique contributing to inaccurate diagnosis.

4. Careful correlation of anatomical and pathological considerations with clinical and myelographic findings leads to more accurate diagnosis.

5. Intramedullary, extramedullary, intradural, and extradural lesions have fairly characteristic myelographic appearances and can often be differentiated from one another by careful analysis of the fluoroscopic and roentgenographic evidence.

6. Clinical and myelographic means of diagnosing protruded intervertebral discs are complementary and their combined use will increase preoperative diagnostic accuracy.

7. Myelography can be well over 90 per cent accurate in diagnosis of protruded discs.

8. Further study of new techniques and ideas will doubtless increase myelographic accuracy.

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DISCUSSION

Dr. M. D. Teitelbaum (New Orleans): Dr. Shipman's discussion of pantopaque myelography has been most thoroughgoing and reflects not only his interest as a student of the subject, but also his large personal experience. He has stressed the point that myelography is a combined operation requiring correlation of the neurosurgical, orthopedic, and roentgen observations and has indicated that with greater experience and improved technique his diagnostic errors have dropped from 16 to approximately 7 per cent. My concern is with that last 7 per cent.

Myelography is one of the large number of radiological procedures which attempts, by employment of contrast media, to visualize lesions which are not directly demonstrable on plain radiographs. Historically, all such procedures become increasingly perfect as they are more widely employed, until finally, some general agreement regarding optimum types and quantities of contrast material and the most rewarding techniques is reached. There remains, however, for each method a hard core of lesions which are so small or so situated that they cannot be recognized by the most careful

and elaborate search. These represent the ultimate, irreducible source of error of that method.

The limitations of myelography are physical with respect to the contrast material and anatomical with respect to the so-called dural sac. No nonabsorbable, nonmiscible, oily opaque material can be considered ideal. However, air myelography is difficult because of the low grade of contrast and the water-soluble medium used by the Scandinavians (skiodan) requires preliminary spinal anesthesia and is not altogether innocuous. Thorotrast is radioactive and should not be used. Consequently, pantopaque, in this country at least, is considered the best of the available contrast substances.

The dural sac, and this part of the discussion refers chiefly to the diagnosis of posterior herniation of the intervertebral disc substance, exhibits considerable anatomical variability which has a direct bearing on the diagnostic accuracy of myelography. The canal varies from 10 to 20 mm. in width and may extend caudally to any level between L-5 and S-4. Its end may be tapering and narrow or wider and well rounded. Furthermore, the axillary pouches differ in length and size and are not necessarily symmetrical. It is obvious that diagnostic accuracy, all other factors being equal, will be higher with long, wide canals which have well formed axillary pouches than when the dural sac is short and narrow and the pouches are small and nearly filled by the substance of the efferent nerves. Epidural and subdural instillation of contrast material appear to offer certain theoretical advantages in extending the scope of the examination, but practically are inferior to myelography (filling of the subarachnoid space) and these techniques have been abandoned. Recently, direct instillation of an absorbable medium into the intervertebral disc itself has been advocated. The discograms unquestionably visualize ruptures of the disc substance into the intervertebral foramen and even at the point where the ganglia and nerves cross the disc outside the foramen. This method also would differentiate posterior bulging of the disc substance with an intact annulus fibrosus from true central posterior herniation. This differentiation is exceedingly difficult by myelography and represents one of the major shortcomings of the method. However, discography is at least potentially dangerous in that it may introduce infection and might possibly injure the posterior portion of the annulus fibrosus so as to permit a subsequent posterior herniation of the nucleus pulposus. Furthermore, multiple disc punctures would be required if more than one level is to be investigated, and tumors of the cauda equina which might simulate herniation of the intervertebral disc substance would be completely overlooked.

Pantopaque myelography, with due regard to its intrinsic shortcomings, is the best available method for demonstration, localization, and differentiation of mass lesions arising from the spinal cord, cauda equina, intervertebral discs and juxtacanalicular portion of the vertebral column. The error will be from 5 to 10 per cent in skilled hands and will approximate 25 to 30 per cent when the study is carried out by casual, inexperienced observers or without proper correlation of the data.

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THE LOUISIANA STATE MEDICAL SOCIETY IS OPPOSED TO ANY LEGISLATIVE ACT WHICH WOULD LICENSE CHIROPRACTORS

Since 1922, the Louisiana State Medical Society has successfully opposed the passage of any bill in the Legislature of the State of Louisiana which would give a license to chiropractors. It is anticipated that such a bill will be presented this year, and judged by the information received from reliable sources, various efforts have been and will be made by the chiropractors to secure its passage.

The Louisiana State Medical Society, as a whole, and the State Board of Medical Examiners are unalterably opposed. They have no intention of accepting a cult which denies that germs can be the cause of illness, who believe that all pathology can be cured by pushing the spine back into line with their hands. They are equally opposed to the acceptance of any group who practice medicine without proper training.

The standards of medical education have been raised continually in the last fifty years through the collective efforts of organized medicine over the nation, and in this task the contribution of the Louisiana State Medical Society and the State Board of Medical Examiners has been substantial. The Medical Practice Act of Louisiana has secured innumerable benefits for the public and for the practitioners of Louisiana. It has been used as a model for the other States, and our Society will continue to make strenuous efforts to prevent its being adversely altered.

Four states do not legalize chiropractic in any form. They are Louisiana, Massachusetts, Mississippi, and New York. To these may be added, so far as the practical effect is concerned, New Jersey, and Indiana, in which the chiropractor must pass the same Board as qualified physicians. Just over a year ago, the physicians of New York successfully resisted the efforts of the chiropractors to become legalized there.

The contention of the misguided persons who advocate chiropractic that as a free American citizen everyone has a right to the selection of a doctor of his choice is not adequate reason for allowing improperly trained persons to practice medicine. Equally fallacious is the statement that the practice of chiropractic is not the practice of medicine. It is common sense that those who treat the sick are practicing medicine. The Supreme Court of Louisiana has ruled that the practice of chiropractic is the practice of medicine. The question of "Am I my brother's keeper?" was raised and answered in the

scriptures centuries ago. It is being answered again in our own times in the general trend of social legislation and by such governmental policies as have established Boards of Examination and Licensure for all the professions and many of the trades. In the complicated structure of modern society the community acknowledges its obligation, and protects its members by the establishment of licensing boards for the professions.

The argument that the chiropractors are among us, in spite of our law, is still no argument to legalize an inadequately trained person who calls himself a doctor. Although there have been some twenty-four convictions of chiropractors who practiced medicine without a license in the State in the past 2 years, there are many still with us. It is obvious, however, that the mere fact that a law does not prevent crime is no reason for allowing crime to go unhampered by legal restrictions. The anticipation is that if they acquired a license the so-called "pure" chiropractors would soon be followed by the "mixers," who, in turn, will attempt gradually to encompass the whole field of medicine.

The opposition of organized medicine to the chiropractor is not based on fear of competition. It is based upon the desire to have medicine practiced on the highest possible plane by adequately trained physicians who realize and accept the grave responsibility involved in the care of human illness. In organizing the opposition to the chiropractic bill, it is recognized that the fight cannot be won in Baton Rouge, but it must be won at home. Every man in the Legislature is receiving literature and personal representations urging his acceptance of the bill. It becomes the duty of every physician to oppose these ideas with the facts. Each doctor should see his representative and senator. He should explain the situation to his patients, who, in turn, will express their opposition to any bill leading to the lowering of the standards of medical practice. After all, the fight is being made in the community interests. Let the members of the community know in what way their interests are at stake.

The presentations on this subject are most timely before civic bodies, service clubs, chambers of commerce, and luncheon clubs. Brochures with adequate data are available at the offices of the Parish and State Societies.

The legislator must be put in the position where he can ignore the vociferous minority and vote for the community's ultimate best interest.

ORGANIZATION SECTION

The Executive Committee dedicates this section to the members of the Louisiana State Medical Society, feeling that a proper discussion of salient issues will contribute to the understanding and fortification of our Society.

An informed profession should be a wise one.

DANGER AHEAD

We will soon be faced with our usual fight in the coming legislature to defeat the chiropractic bill which comes up for enactment every two years. It will be absolutely necessary prior to (NOW) and at the next session to employ every means at our command, to defeat this bill, and render to our legislators and citizens every assistance possible to show and convince them that the claims of these chiropractors as to their educational qualifications and their claims of curing every disease from which human beings suffer, by adjustments of the spine are without foundation. You, as medical men, know their claims are false, but the unsuspecting public unfortunately does not, and is too frequently led astray by their claims of cures, and are finally caught in their alluring traps. We, as scientific medical men, are not concerned personally about

how many cases they have and are not jealous of them in any way. However, when the Louisiana State Board of Medical Examiners issues to us a license to practice, it carries with it an obligation to look after the health and physical welfare of our citizens and to protect them against all quacks, charlatans and cultists who might come into our state to force their wares on our good people. A Medical Society has among its duties not only the promotion of those practices which advance the art of healing the sick, but also the elimination of those which do harm to the patient, because they are based upon false and unscientific conclusions. It is illegal for these chiropractors to practice in our state as declared and upheld by the State and United States Supreme Courts. These Courts have so decreed that this wholly unprepared group of individuals, by education and training, and not qualified, have not been licensed to practice medicine in Louisiana. The Supreme Courts have further decreed that they (the chiropractors) are practicing medicine and are not licensed to do so by the State Board of Medical Examiners, the only group legally qualified to issue a license to practice medicine in our State. These chiropractors know they are practicing medicine illegally and continue to do so, with as little regard for the Courts and laws of our State, as they have for the unfounded and ridiculously impossible claims they make of curing all diseases by manipulation of the spine and releasing a supposedly pinched nerve. If it were not such a serious thing for our citizens, who fall into their hands, it would be quite laughable to all intelligent people to believe they could, by releasing a pinched nerve, cure diseases like smallpox, yellow, malarial and typhoid fevers, diphtheria, tetanus (lockjaw), pneumonia, tuberculosis, diabetes, appendicitis, gallbladder disease, nephritis (Brights disease), cancer and polio, and many others too numerous and absurd to mention. How any conscientious man or woman with a fair degree of intelligence could believe these chiropractors could cure the above group of diseases is beyond comprehension.

These chiropractors would have us believe that when an epidemic disease spreads among the people of a community, that the vertebrae of all the sick slip out of position at the same time, and begin to pinch the nerves.

If adjustments of the spine cure disease, why don't we have chiropractic Veterinarians?

It is said that in the year 1885, the City of Davenport, Iowa, lost one of its best grocers and fish dealers, when D. D. Palmer, said to be the discoverer of chiropractic, closed his store, to take up magnetic healing. In 1895, he claimed to have cured a colored janitor of deafness by adjusting a bump on the man's back. It is said that this is how chiropractic was born.

It is also said that B. D. Palmer, son of D. D. Palmer, and owner and President of the Palmer School of Chiropractic, addressing a Chiropractors' convention in 1920 said: "Our school back in Davenport is established on a business and not a professional basis. It is a business where we manufacture chiropractors. They have got to work just like machinery. A course of salesmanship goes along with their training. We teach them the idea and then we show them how to sell it."

If the chiropractors are so anxious to practice their cult in Louisiana, why don't they go to a recognized Grade A medical school and secure an M. D. degree? They could, then, take the examination given by our Board of Medical Examiners and, if successful in passing, would be issued a license to practice medicine in Louisiana, and would then be recognized as upright and law abiding citizens. They would not then, have to break the law to practice medicine. No, the chiropractor does not want to do this. He would prefer to have the legislature create a Board for them and come in through the back door under the "Grandfather Clause", rather than be licensed on his merits, qualifications, educational attainments, medical ex-

perience and scientific training. We M.D.'s have to meet these requirements. Why should not the chiropractor be required to meet the same qualifications?

We understand that once they have their own board and license all who apply in addition to those who come in under the "Grandfather Clause", begin to do surgery, administer drugs, reduce fractures and deliver babies. This is what they are doing in other states. Why should we expect anything different of them in Louisiana, if they are granted their own Board by the legislature? We contend as do the Supreme Courts that they are illegally practicing medicine and should pass the same licensing Board, exacting the same requirements and qualifications required of all M. D.'s. The regulation of the practice of the healing arts is not undertaken by the State of Louisiana for the protection of our doctors, but to safeguard and protect the welfare of the people.

We do not want to lower the standards of our medical services to our citizens; the kind of medical services that over the years have partially or completely eliminated from our midst many of the most dreaded diseases like yellow fever, bubonic plague, typhoid fever, diphtheria, smallpox, and many others which were nightmares to our parents and grandparents.

When our physicians, the allopathic group of practitioners, are required to meet the high standards of requirements exacted of them by the rigorous curriculum in our accepted Grade A medical schools, and when our State Board of Medical Examiners demands of all who apply for examination that they meet these qualifications in education and training, it is not hard to see and understand why the American people, including the citizens of Louisiana, are getting the best medical service furnished any nation in the world. Taking these facts into consideration, it is easy to explain, and should be very convincing to the most unsuspecting and doubtful sector or groups of our population when it is known that this kind of service has been responsible for the extension of the longevity of life from 34 years in 1908 to 69 years in 1954. Do you think the chiropractors with their poor educational qualifications and limited training could have accomplished this record?

All members of our profession should immediately contact their senators or representatives personally, and have their lay friends do likewise, enlisting their influence and support in defeating the chiropractic bill which is sure to be introduced at the next session of the legislature. The legislature convenes during the first few days of May so you have only a short time in which to contact your legislators. We owe it to the citizens of our state to defeat this bill since we are held responsible for their health and wellbeing. They look to us for protection. Don't let them down.

———o———

NINTH NATIONAL CONFERENCE ON RURAL HEALTH BAKER HOTEL, DALLAS, TEXAS MARCH 4-6, 1954

For the ninth straight year the Rural Health Council of the AMA has held its Rural Health Conference and proved that meeting with the lay public is good public relations for the medical profession.

This year's theme "Let's Put More 'U' in Community" was demonstrated in each assembly. Since Dr. F. S. Crockett was on a world tour, Dr. Carl S. Mundy acted as the presiding officer. The first morning was given over to the Rural Health Committees of the various states, and the rest of the Conference was opened to everybody. There was an attendance of approximately 500 people, and because of weather conditions many more could not reach Dallas. This year's plan of having one general speaker and a panel of four or five specialists in their own field worked out beautifully. Dr. J. P. Schmidt, Professor of Rural Sociology at the University of Ohio, was a master on handling the

question and answer period. Such outstanding speakers as Drs. Charlotte Benson of Raleigh, N. C., John B. Youmans of Nashville, Tennessee, and Lambert Schultz of Chattanooga, Tennessee, were excellent in their respective roles. The discussion periods were participated in by all present, and no one felt like he had been left out when the Conference was over. All in all, your Committeemen, Dr. M. C. Wiginton and I, were well pleased.

J. P. SANDERS, M. D., Chairman,
Committee on Rural and
Urban Health.

MEDICAL NEWS SECTION

CALENDAR

PARISH AND DISTRICT MEDICAL SOCIETY MEETINGS

Society	Date	Place
Calcasieu	Fourth Tuesday every other month	Lake Charles
East Baton Rouge	Second Tuesday of every month	Baton Rouge
Morehouse	Third Thursday of every month	Bastrop
Natchitoches	Second Tuesday of every month	
Orleans	Second Monday of every month	New Orleans
Ouachita	First Thursday of every month	Monroe
Rapides	First Monday of every month	Alexandria
Sabine	First Wednesday of every month	
Second District	Third Thursday of every month	
Shreveport	First Tuesday of every month	Shreveport
Vernon	First Thursday of every month	

SOUTHWEST ALLERGY FORUM

The Southwest Allergy Forum will hold its fifteenth annual meeting at the Roosevelt Hotel on May 9-10-11.

Allergists from all sections of the United States will attend and an outstanding program has been arranged. Members of the Tulane and LSU Medical Faculties will participate. Copies of the program will be mailed to all members of the Louisiana State Medical Society.

EXPERIMENTAL POLIO VACCINE

Eli Lilly and Company has begun production of an experimental polio vaccine for mass immunization trials to be conducted by the National Foundation for Infantile Paralysis.

Eugene N. Beesley, company president, said the vaccine will be produced for the National Foundation on a nonprofit basis.

"We welcome the opportunity," said Beesley, "of co-operating with the National Foundation by producing material for the clinical trial of the polio vaccine. Our experience in biological manufacturing and in tissue-culture procedures has enabled us to start production promptly."

He emphasized that all the vaccine to be made by Lilly will be for the specific purpose of the mass clinical trials, and its distribution will be under the complete control of the National Foundation for Infantile Paralysis.

PILLS WON'T REDUCE WEIGHT— ONLY CONTENTS OF POCKETBOOK

"Sugar and spice and everything nice"—that's what most reducing nostrums are made of.

Fleecing the fat is the sole objective of most of the patent medicines and fancy devices promoted today for "slenderizing," according to Dr. Max Millman, Springfield, Mass.

Such medicines and devices are inert, useless, ineffective and a waste of time and money. People using them are looking for a short cut to weight reduction—a thing which does not exist —Dr. Millman wrote in a recent Today's Health magazine, published by the American Medical Association.

Usually such nostrums contain only syrup, flour, sugar, powdered milk, powdered eggs, vitamins, minerals and flavoring agents Dr. Millman said, adding:

"Another word to describe the reducing nostrums of today is placebo, defined in the medical dictionary as a 'make-believe medicine given to please or gratify the patient.' They are like so much sugar, salt or other foodstuff having no pharmacologic or medicinal value whatever. They do not diminish the appetite; they do not 'burn up' fat; and they do not cause weight loss."

"The regulation and restriction of food intake and the cultivation of better eating habits still form the basis of all effective and permanent reducing."

DRIED BLOOD PLASMA AIDS IN TREAMENT OF BED SORES

Dried blood plasma and Peruvian balsam, in the form of a paste, have produced striking beneficial effects in the treatment of ulcerated bed sores, it was reported in the October 31 Journal of the American Medical Association.

Preliminary studies showed that the preparation caused rapid healing, according to Drs. A. Bernice Clark and Howard A. Rusk, New York. A striking effect was noted especially in those ulcers in which there was dead tissue and infection. In such cases, the paste's action in removing all dead tissue and infection from the wound was most significant, the doctors added.

MISSISSIPPI VALLEY MEDICAL SOCIETY 1954 ESSAY CONTEST

The Thirteenth Annual Essay Contest of the Mississippi Medical Society will be held in 1954. The Society will offer a cash prize of $100.00, a gold medal, and a certificate of award for the best unpublished essay on any subject of general medical interest (including medical economics and education) and practical value to the general practitioner of medicine. Certificate of merit may also be granted to the physicians whose essays are rated second or third best. Contestants must be members of the American Medical Association who are residents and citizens of the United States. The winner will be invited to present his contribution before the 19th Annual Meeting of the Mississippi Valley Medical Society to be held at Chicago, Sept. 23, 24, 1954, the Society reserving the exclusive right to first publish the essay in its official publication—the *Mississippi Valley Medical Journal* (incorporating the *Radiologic Review*). All contributions shall be typewritten in English in manuscript form, submitted in five copies, not to exceed 5000 words, and must be received not later than May 1, 1954. The winning essays in the 1953 contest appear in the January 1954 issue of the *Mississippi Valley Medical Journal* (Quincy, Ill.). Further details may be secured from: Harold Swanberg, M.D., Secretary, Mississippi Valley Medical Society, 209-224 W. C.U. Building, Quincy, Ill.

BOOK REVIEWS

Physical Examination of the Surgical Patient; J. Englebert Dunphy and Thomas W. Botsford Philadelphia, Pa., W. B. Saunders Company, 1953, Pp. 326, Illus. Price $7.50.

This book reinforces the great importance of the examination of a patient, utilizing the simplest means, namely, the senses of the examiner. Its entire emphasis is upon surgical conditions.

Some of the outstanding features of the text are its drawings of the locations of possibly palpable lymph nodes, a complete listing of the usual findings in the most common surgical conditions, a separate chapter on the abdomen of infants and children, and excellent coverage of the examination of the injured patient.

The volume is a useful compendium of the most valuable means through which a surgeon can arrive at a diagnosis. It is clearly written and presented. The illustrations are well drawn and well printed. Therefore, I believe this book will be welcomed by teachers and students.

PAUL TRAUTMAN, M. D.

Syphilitic Optic Atrophy; by Walter L. Bruetsch, M. D., Springfield, Ill., Charles C. Thomas, 1953. Illus. Pp. 138. Price $5.50.

In this monograph the author reviews the pathogenesis, clinical features and treatment of this condition, which according to statistics causes more than 20,000 cases of blindness in the United States.

From a complete histopathologic study of the optic pathways and neighboring structures in cases of the three main types of neurosyphilis (general paralysis & taboparalysis, meningovascular syphilis and tabes) the author concludes, in accordance with the opinion of Leri and Stargardt, that there is no significant difference in the pathology and pathogenesis of these types and that the so-called primary syphilitic optic atrophy is the degeneration of the optic nerve fibers which is always caused by an inflammatory process within the nerve itself, mainly situated in its intracranial portion and in the chiasm. Dr. Bruetsch stresses the importance of an early diagnosis by the correct search and interpretation of the clinical findings (pupillary abnormalities, visual field defects, pallor of the disc, etc.) because only if the proper treatment (malaria, penicillin) is initiated before the degenerative changes are advanced can blindness be prevented.

BERTHA R. NOBLE, M. D.

PUBLICATIONS RECEIVED

Appleton-Century-Crofts, Inc., N. Y.: Holt Pediatrics, by L. Emmett Holt, Jr., M. D., and Rustin McIntosh, M. D. (12th Edit.).

Ejnar Munksgaard, Copenhagen, Denmark: Acute Anuria, by Claus Brun.

Philosophical Library, N. Y.: Thoughts About Life, by Felix Friedberg; The Jealous Child, by Edward Podolsky, M. D.

W. B. Saunders Co., Phila.: The Hepatic Circulation and Portal Hypertension, by Charles G. Child, III, M. D.

Charles C Thomas, Publisher, Springfield, Ill.: Acute Renal Failure, by Arthur Grollman, Ph.D., M. D.



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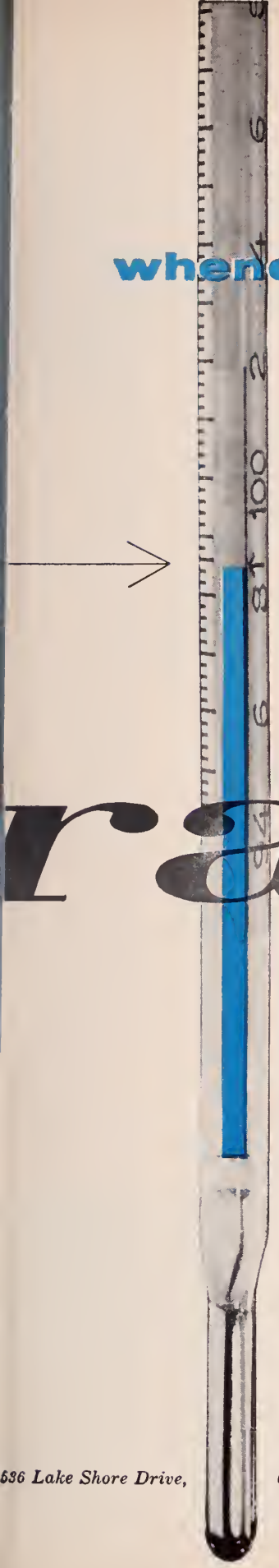
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**English, A. R., et al.: Antibiotics Annual (1953-1954), New York, Medical Encyclopedia, Inc., 1953, p. 70.*

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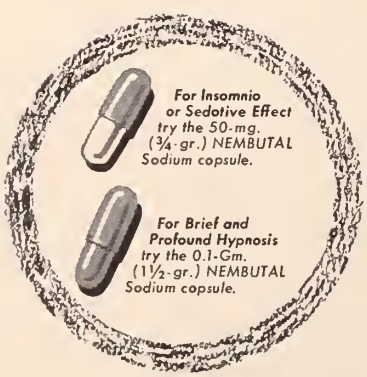
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1. Cowart, E. C., Jr.: Mississippi Doctor 29:278 (April) 1952.
2. Sayer, R. J., et al.: Am. J. M Sc. 221:256 (March) 1951.
3. Knight, V.: New York State J. Med. 50:2173 (Sept. 15) 1950.
4. Trafton, H. M., and Lind, H. E.: J. Urol. 69:315 (Feb.) 1953.

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If the patient complaining of aching joints is a woman between 37 and 54 years of age, it is highly possible that she is suffering from arthralgia rather than arthritis.[1] It has been estimated that arthralgia occurs in about 40 per cent of women with estrogen deficiency, and is exceeded in frequency only by symptoms of emotional or vasomotor origin.[2] In fact, arthralgia may be as indicative of declining ovarian function as the classic menopausal hot flushes.

Arthralgia, however, is just one of a vast number of distressing but ill-defined symptoms that may be precipitated by the loss of estrogen as a "metabolic regulator." Other good examples are insomnia, headache, easy fatigability, and tachypnea.

Because these symptoms sometimes occur years before or even long after cessation of menstruation, they are not always readily associated with estrogen deficiency, and the tendency may be to treat them with medications other than estrogen. Obviously, sedatives and other palliatives cannot be expected to produce a satisfactory response if an estrogen deficiency exists. Only estrogen replacement therapy will correct the basic cause of the disorder.

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1. Greenblatt, R. B., and Kupperman, H. S.: M. Clin. North America *30*:576 (May) 1946. 2. McGavack, T. H., in Goldzieher, M. A., and Goldzieher, J. W.: Endocrine Treatment in General Practice, New York, Springer Publishing Company, Inc., 1953, p. 225.

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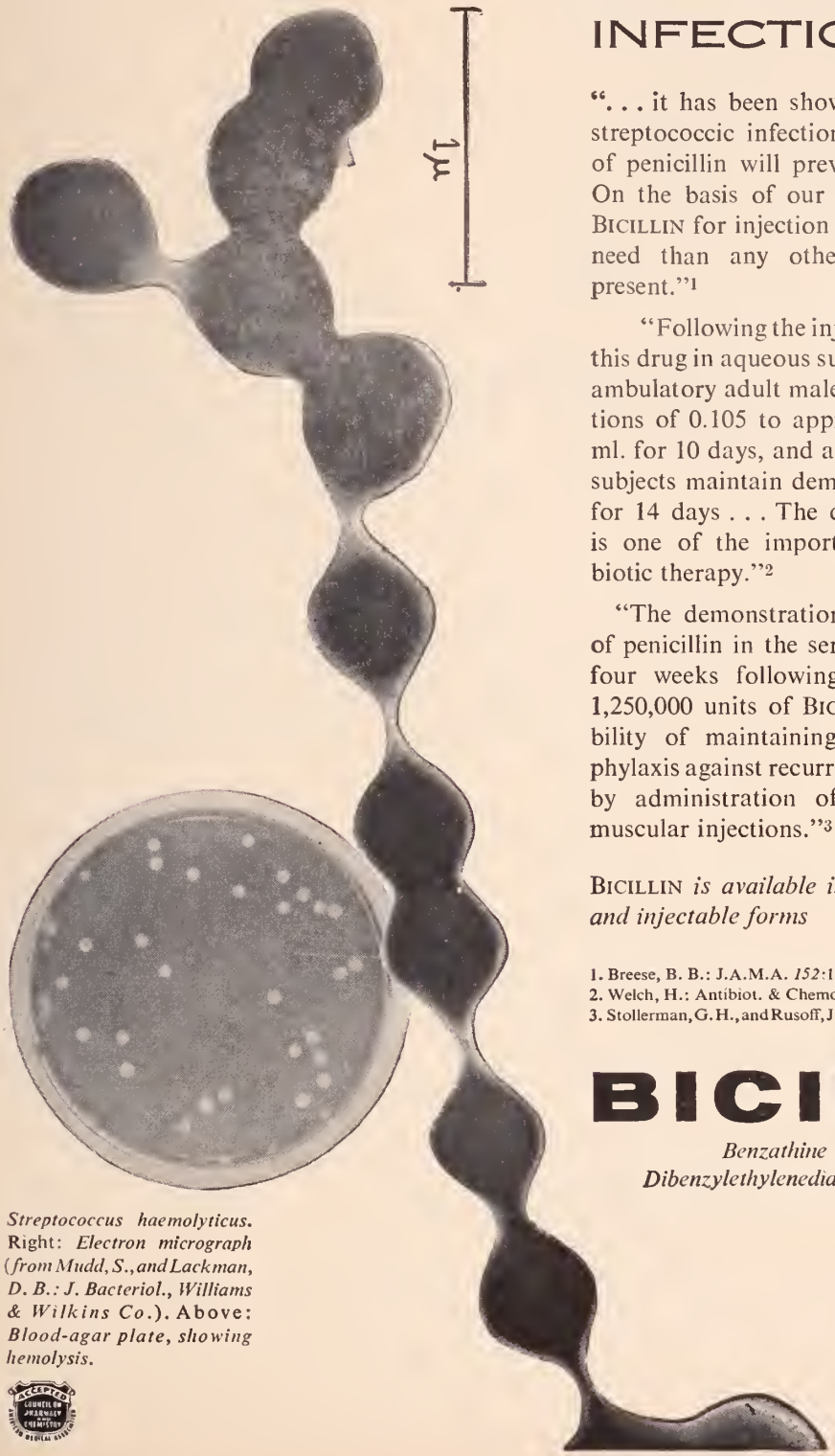
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1. Breese, B. B.: J.A.M.A. *152*:10 (May 2) 1953
2. Welch, H.: Antibiot. & Chemo. *3*:347 (April) 1953
3. Stollerman, G. H., and Rusoff, J. H.: J.A.M.A. *150*:1571 (Dec. 20) 1952

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Streptococcus haemolyticus. Right: *Electron micrograph (from Mudd, S., and Lackman, D. B.: J. Bacteriol., Williams & Wilkins Co.).* Above: *Blood-agar plate, showing hemolysis.*

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The Cancer Committee of the Louisiana State Medical Society

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A MIDWAY REPORT

At the end of February the thirty weekly American Cancer Society telecasts to physicians in seven cities from the East Coast to the Midwest passed the halfway mark. The studio was moved from the Francis Delafield Hospital of Columbia-Presbyterian Medical Center, where the first fifteen programs originated, to Memorial Cancer Center for the concluding fifteen telecasts.

At the midway point of this experiment in postgraduate medical education, representatives of the medical profession agreed that

THE SERIES IS MAKING MEDICAL HISTORY. An innovation in postgraduate training, the programs are bringing to a large number of general practitioners "live" demonstrations in the use of the latest techniques for detecting, diagnosing and managing cancer.

The programs are contributing substantially to the Society's emphasis on making every doctor's office a cancer detection center.

The kinescopes (films) of the early programs, now in production, are superior educational weapons in the fight against cancer. They will be made available to the medical profession throughout the country.

Launched on October 21, 1953, in cooperation with the Columbia Broadcasting System, the series received national newspaper coverage as a remarkable advance in medical training.

Total attendance for the seven cities—Boston, New York, Philadelphia, Pittsburgh, Toledo, Detroit and Dearborn—for the first half of the series was between 19,000 and 20,000.



Louisiana State Department of Health

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The incidence of Infectious Hepatitis in the United States has increased more than 2 times for the first 10 weeks of this year over what it was for the same period last year.

Infectious Hepatitis became a reportable disease in Louisiana on January 1st of this year. Reports are now coming in and the disease is being reported from all parts of the State. So far, St. Tammany Parish has reported the greatest number of cases.

We do not know if the increase is due to better reporting or better recognition. Since many an-icteric cases occur, however, physicians are advised to be suspicious of a child or young adult with anorexia, nausea, vomiting, abdominal discomfort, pain in the right upper quadrant of the abdomen or epigastrium and a tender liver.

Abnormal liver function tests associated with clinical and epidemiologic findings are strongly suggestive.

The virus is present in the blood during the acute phase and in the stool during the acute, convalescent and chronic phases.

Relapses are common and usually follow too early return to activity. Bed rest is extremely important in treatment.

The most important control measures are handwashing, gamma globulin for household contacts and good sanitation.



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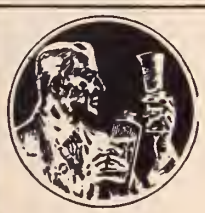
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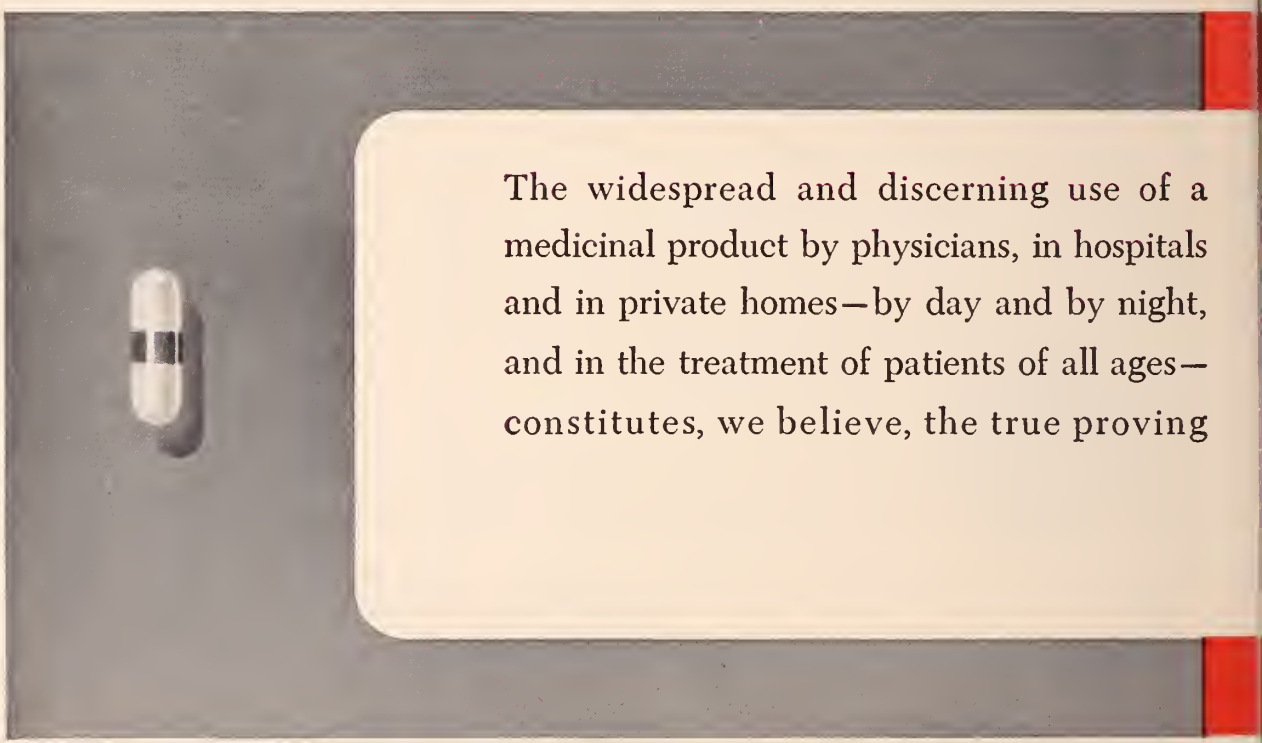
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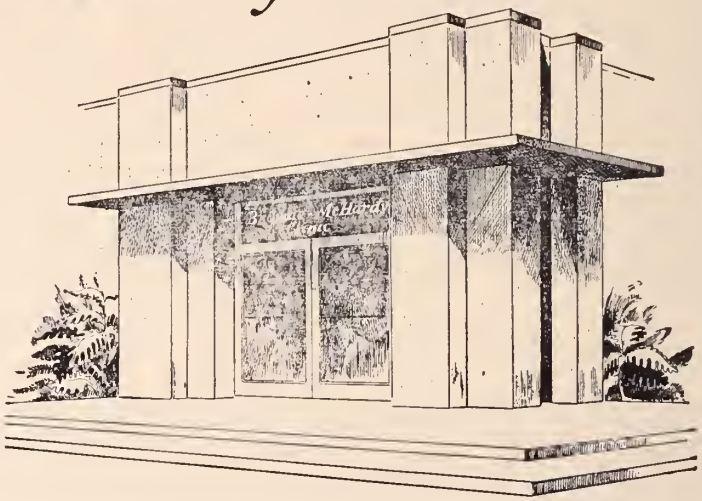
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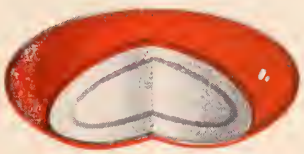
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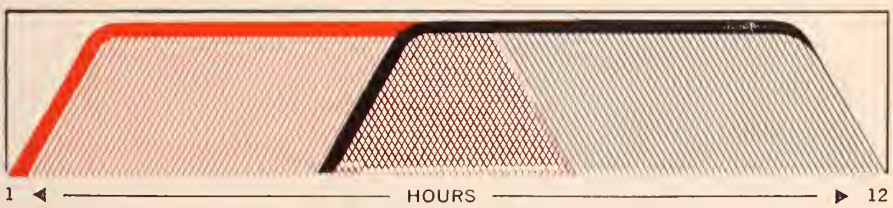
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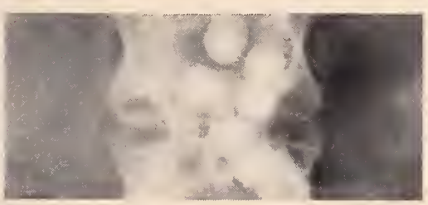
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1. Heller, E. M.: The Treatment of Essential Hypertension. Canad. Med. Assn. Jour., 61:293, Sept., 1949.

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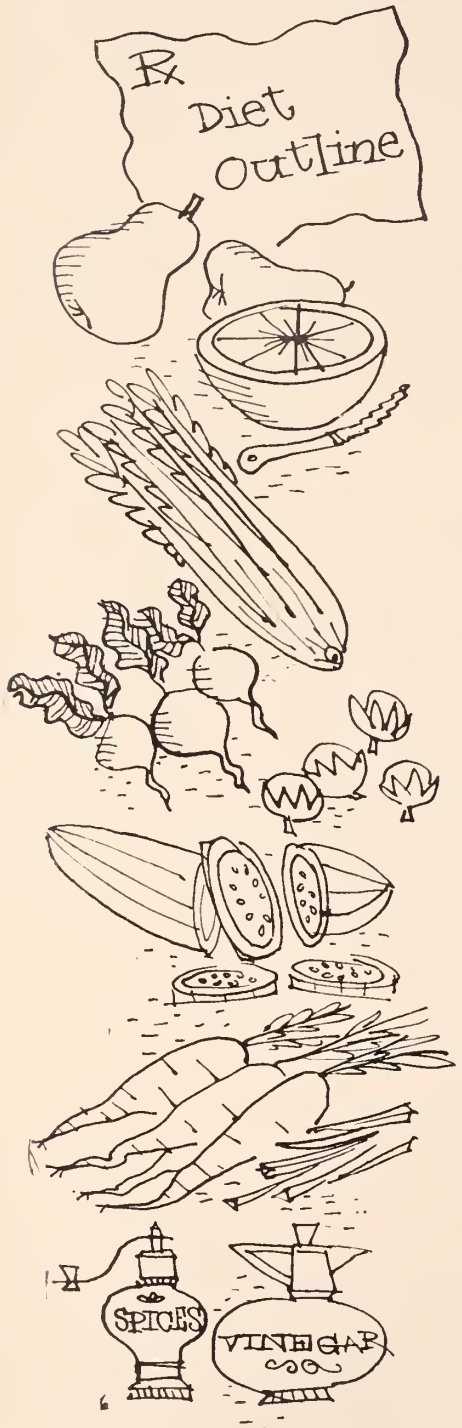
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THE COMMUNITY POLIO CENTER

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BATON ROUGE

At the time I was asked to prepare this paper the topic was pertinent. Advances in medical knowledge and technology in the past year suggest that in the near future, if we apply this knowledge, that polio like diphtheria and smallpox will no longer be a major problem causing a need for polio centers. At the present, however, statistical evidence still points up a need for polio centers.

For the nation since 1915, with the exception of 1916, there has been a steady increase in the number of cases of infantile paralysis and a steady decrease in the number of deaths per 100 reported cases, but almost no change in the death rate per 100,000 population. (Table 1).

Excluding 1952, for which figures were not available while preparing this paper, the highest death rate per 100,000 population was in 1916 when the rate was 9.4 or five times what it was in the second worse year, 1927, with a rate of 1.9. (Table 1)

The highest death rate per 100 reported cases was 42.4 in 1918. The lowest was in 1951 when it was 4.7 per cent. (Table 1).

The five years in order, from greatest to least of the five, in which the greatest number of cases of polio have been reported since 1915 are 1952 (57,628), 1949 (42,033), 1950 (33,303), 1951 (28,395), 1948 (27,726). (Table 1).

TABLE 1.
CASE, DEATH AND FATALITY RATES
POLIOMYELITIS UNITED STATES BY YEAR *

Year	Cases Per 100,000 Pop. †	Deaths Per 100,000 Pop. †	Deaths Per 100 Reported Cases
1915	3.1	1.0	40.3
1916	41.4	9.4	26.2
1917	5.0	1.5	34.8
1918	2.9	1.1	42.4
1919	2.3	.8	41.3
1920	2.8	.8	36.8
1921	6.9	1.7	29.7
1922	2.4	.8	38.1
1923	3.4	.9	30.6
1924	5.6	1.0	22.0
1925	5.5	1.4	27.5
1926	2.5	.8	36.1
1927	8.8	1.9	20.8
1928	4.7	1.2	28.2
1929	2.7	.7	30.1
1930	7.9	1.2	15.5
1931	14.6	1.7	13.6
1932	3.2	.7	23.4
1933	4.3	.6	16.0
1934	6.0	.7	11.3
1935	8.5	.8	9.6
1936	3.5	.6	17.3
1937	7.4	1.1	15.4
1938	1.3	.4	28.6
1939	5.6	.6	10.5
1940	7.4	.8	10.4
1941	6.8	.6	8.9
1942	3.0	.4	13.9
1943	9.3	.9	9.2
1944	14.3	1.0	7.2
1945	10.3	.9	8.7
1946	18.4	1.3	7.2
1947	7.6	.4	5.4
1948	19.0	1.3	6.8
1949	28.3	1.8	6.5
1950	22.0	1.1	5.1
1951	18.8	.9 ‡	4.7
1952	37.0	N. A.	N. A.

* Statistical Services Dept. N. F. I. P.—1-53.
† Based on Population of States Reporting
‡ Based on 10% Sample of Death Certificates
N. A.—Not available
Note: Morbidity data for earlier years should be interpreted with caution because of probable underreporting of less serious cases.

* Presented at the Seventy-third Annual Meeting of the Louisiana State Medical Society, May 9, 1953, in New Orleans.

The five years in order, from greatest to least of the five, in which the highest rate per 100,000 population has been reported are 1916 (41.4), 1952 (37.0), 1949 (28.3), 1950 (22.0), 1948 (19.0) (Table 1)

For Louisiana the number of cases of polio per 100,000 population per year with corresponding rate since 1948 are: 163 (6.3), 227 (8.6), 409 (15.2), 836 (31.1), 863 (33.0). (Table 2).

TABLE 2.
ANNUAL NUMBER OF CASES OF POLIOMYELITIS REPORTED AND CASE RATE PER 100,000 POPULATION—LOUISIANA—1948-1952 *

Year	1948	1949	1950	1951 †	1952 †
Cases	163	227	409	836	863
Rate	6.3	8.6	15.2	31.1	33.0

* Statistical Services Department—National Foundation for Infantile Paralysis—Source—United States Public Health Service

† Provisional

Louisiana from 1948 to 1952 has had an annual average of 500 cases to rank it 25th in the nation for number of cases. (Table 3). In 1952, Louisiana reported 863 cases to jump it from 25th to 19th in rank in the nation in number of cases reported.

TABLE 3 *
NUMBER OF CASES OF POLIOMYELITIS REPORTED; CASE RATE PER 100,000 POPULATION † AND RANK AMONG STATES FOR NUMBER OF CASES REPORTED AND RATE—LOUISIANA FIVE YEAR AVERAGE 1948-1952 ‡ AND 1952 ‡

Number of Cases				Cases Rate Per 100,000 Population			
1948-1952		1952		1948-1952		1952	
Annual Avg.	Rank	Total	Rank	Annual Avg.	Rank	Annual Rate	Rank
500	25	863	19	19.1	33	33.0	28

* Statistical Services Dept.—N. F. I. P.—Source—United States Public Health Service.

† Based on April 1, 1950 Population for 5 year averages and for 1952 State Date; estimated July 1, 1952. Population for 1952 U. S. Total.

‡ Data for 1951 and 1952 are provisional.

The case rate per 100,000 population for Louisiana for the five year period, 1948 to 1952, averaged 19.1 to rank Louisiana 33rd in order of frequency of the States of the nation. The case rate in 1952 was 33.0 as Louisiana jumped from 33rd to 28th place among the states. (Table 3.)

In 1951 and 1952, polio occurred in almost every parish in Louisiana. For the past five years polio has been steadily increasing each year in numbers of persons infected with the polio virus. At the present time there are four polio centers operating in Louisiana. These are located in the Charity Hospital, New Orleans, the Baton Rouge General Hospital, Baton Rouge, the Baptist Hospital, Alexandria, and the Charity Hospital, Shreveport.

These four centers admitted and treated 785 of the 863 persons reported as infected with polio virus in Louisiana in 1952.[2] The remaining number of cases were treated outside these centers.

Only three parishes in 1952, Madison, Tensas, and West Feliciana, did not send patients for care to one of Louisiana's four treatment centers. East Baton Rouge Parish sent the greatest number of cases, 161; while Orleans Parish was second with 101. Caddo was third with 30 cases and Rapides and Ouachita each sent 28 cases to a treatment center.

In addition to having the greatest number of cases in 1952, East Baton Rouge had the highest incidence with one case per 1,000 population. In 1952, there was a shift of area of highest incidence from north Louisiana, in 1951, to south Louisiana, in 1952.

Of the 785 persons treated in the centers in 1952, 560 were 9 years of age and under and 110 were over 20 years of age; 664 were white and 121 were negroes; 439 were males and 346 were females. The youngest person admitted for treatment was a five week old boy and the eldest was a 49 year old white woman (Table 4).

TABLE 4
DISTRIBUTION BY AGE, COLOR AND SEX OF PATIENTS ADMITTED TO LOUISIANA'S POLIO CENTERS—1952

Ages	White		Negro		Total For ages
	Male	Female	Male	Female	
Under 1 yr.	21	25	5	1	52
1 - 4	129	98	36	25	288
5 - 9	116	78	16	10	220
10 - 14	39	25	14	2	80
15 - 19	12	17	4	2	35
20 - 29	31	47	3	1	82
30 - 39	11	10	0	2	23
40 & Over	2	3	0	0	5
TOTALS	361	303	78	43	785

One person died of polio in 1951, and 17 in 1952. Louisiana's polio mortality rate in 1951-1952 was slightly more than 2 per cent as compared to a reported national average of 6 per cent. Twelve of the 18 persons dying were females and 17 were white. Eleven of the deaths occurred in persons past 21 years of age. Of these 11, 9 were women. In 7 deaths under 21 years of age 1 was a teenager and 6 were 8 years of age or younger. Four of the 7 were male and 3 were female; 6 were white and one was negro. [2]

One or more cases of polio occurred each week of 1952 with July 20-26 being the worst week, with 50 cases reported. One-hundred and eighty-five cases in July made July the worst month of the year. Fewer cases (11) occurred in November than in any other month. [2]

Of the 785 persons admitted to the polio centers of the state in 1952, 698 were discharged after an average hospital stay of approximately forty days each. Eighty-six persons admitted to the centers in 1952, were still there on January 1, 1953. As of that date these had an average hospital stay of approximately 118 days each.[2]

This statistical data has been presented for the specific purpose of suggesting that the diagnosis and care of persons infected with polio virus is becoming increasingly important because of the increasing number of cases occurring in this country, that expanding medical knowledge and skills relating to the person infected with polio virus require a specialized facility to integrate the men, machines, money and skills into a unified attack against polio and to demonstrate some of the problems facing these polio centers from the standpoint of housing persons of different sexes, age groups, etc.

Although polio is worldwide in its occurrence, paralytic polio is more frequent in the temperate than any other zone, so we who live in the temperate zone must be constantly alert and ready to meet this challenge.

Polio occurs most often in the temperate zone between the months of July and November, but it also occurs in every other month of the year. This, plus the fact that persons infected with polio virus may require extended hospitalization, necessitate providing in the center an adequate number of trained personnel and beds and sufficient equipment to meet the community's usual needs for polio and to permit adequate expansion in times of unusual incidence.

Having considered the reasons for having polio centers and some of the problems associated with housing in a polio center, it is well at this time to define what is meant by "Polio Center." A polio center is a facility serving a large or small geographical area, depending upon the population density, and which may or may not cut across governmental or political subdivision lines.

The center is the brain in the community's fight against polio. Here are integrated the knowledge, skills, equipment, methods, drugs and money made available by the community to fight polio.

There is no blueprint for the organization and operation of a center. Each community must resolve the problem in its own way. There are certain principles which will serve as guideposts. Wise application of these principles adapted to the local situation will result in a well planned, well operated center, meeting a real community need.

Essential to the development and operation of a polio center is widespread individual and group participation at the community level. The development and operation of a center requires careful planning geared to the communities resources and the needs of the individual patients who will use it, and their families, and this is best studied and worked out by many persons working as team rather than by one expert.

Adequate housing for sex, age group, and status of the disease must be provided. This means rooms for isolation of patients in the acute phase of polio, and for patients with polio who may be also infected with other communicable disease, adequate

space for special-care patients such as those in respirators, needing oxygen, post-tracheotomy care, rocking bed routine and special observation during the period of toxemia and of bulbar and intercostal paralysis and space for the postacute cases according to age group and sex.

Inseparable from adequate housing for the adequate care of persons sick with polio are competent medical, nursing and ancillary personnel, such as physiotherapists, occupational therapists, laboratory technicians, and mechanics of the skill trades, together with the tools these folks need to properly perform their function.

The patients for whom the Center serves are entitled to care regardless of the individual's personal ability to pay for the needed services. Each person, however, should be expected to pay for his care according to his ability. This may be from his personal means or through insurance which has been purchased for this purpose. The person's ability to pay is exceeded when he has to start mortgaging real property or when he has to borrow to start paying for the services he is receiving. At the time that this point is reached the National Foundation for Infantile Paralysis should assist the patient in meeting his financial obligations. Since the money for this purpose is donated annually by folks all over the country through the March of Dimes, any person afflicted with polio should expect and receive this aid without considering it a handout. Because any one of us may some day stand in need of this help each of us should generously support the March of Dimes and in addition obtain insurance which will help us foot the bill if one is presented to us. This is important because we can expect adequate services from our centers only if they are adequately financed and if we do not support them voluntarily we may have to support them through taxation.

Once a center is established, housed, staffed and equipped the real job, the job of operating the center, begins. No matter how well housed and equipped a center is, it is only as good as the men and women who staff and use it. Good operation of a center is based on the team concept. The team is made up of patients, doctors, nurses, physiotherapists, occupational therapists, dieticians, laboratory workers, skilled mechanics, aides, porters, maids, druggists, community volunteers, the families and friends of patients, the local chapter of the National Foundation for Infantile Paralysis, the insurance companies, who write polio insurance, the official health agency of the community, and the hospital administrator. Each of these has an interest in the center and certain responsibilities to the center. Because each is a member of the team, each should be represented on the governing body of the center. This body should be given the responsibility and authority for defining the responsibilities of each of the groups serving the patient through the team. This requires study, discussion, planning, and operation for the good of all. Agreements should be reached and established as policies. To be effective these policies should be broad, flexible, written, and subject to review not only when the situation indicates a change, but subject to periodic study and analysis. Policies based on sound principles should govern every sphere of activity of the center.

In the organizational set-up of the center special attention should be given to the selection of a well trained medical administrator noted for his ability to get along with people. In this individual should be vested the authority to implement the policies established by the governing body. Working in close harmony with the administrator should be an advisory committee of professional personnel representing the different specialty medical and technical groups servicing the center. This committee should meet with the administrator to consider all technical problems and give the administrator the benefit of their thinking so that he may properly advise the Board to help them formulate policies governing technical matters so that he may better establish sound practices and procedures in the

technical field of operation of the center.

Maintenance and improvement of knowledge and skills of technical people is needed if the center is to operate most effectively. To this end in-service training programs and attendance at institutes, workshops and courses of formal instruction are necessary. Opportunity to attend such instruction should, therefore, be made available to all full time professional and technical personnel of the center. If the center provides its personnel with generous salaries these folks can then be expected to pay their own way to these educational programs. If, however, the salaries paid are only average for the community in which the center is located and are not adequate for the worker to obtain the training without real hardship, it is well to remember that the benefit from the training accrues to the community and the center should provide in its budget for training these workers.

The effectiveness and problems of the center can only be measured by the results it achieves or fails to achieve. These results can be measured only if they are recorded in such manner that the recorded information lends itself readily to sorting and analysis. Most hospitals and centers are still in the horse and buggy days in this regard. The most costly item in any budget today is salaries. Hand tabulation and sorting uses many hours of a worker's time when the same job could be done in a matter of minutes if the recording, sorting and tabulation of data were done by business machines designed for that purpose. Utilization of suitable machines in the centers would result in more accurate information early enough for it to be of value in planning for the future.

Two special problems which each center must face and solve are "who is to be responsible for the medical management of the patient sick with polio?" and "what is to be done to handle the emergency that arises when the medical person responsible for the patient is out of pocket?"

Obviously, the physician of the patient's choice is the one responsible for the medical management of the case. Expanding medical knowledge, however, has made it difficult for any physician to be thoroughly competent in several different specialties. To assist the family physician when he wants advice and to care for those patients admitted to the center who do not have a physician of their own, the center should establish a team of specialists—an orthopedist, pediatrician, internist, neurologist, otolaryngologist, physical medicine man, pathologist, public health physician, physiotherapist, and a nurse specially trained in the nursing care of persons with polio. This team should function as a team with all persons on whom it is called in to help. Only with close integration of knowledge and skills of these specialists working in harmony with all other persons in the center can the patient receive optimum care.

To properly handle the emergency which arises while the attending physician is unavailable the nurse should have written standing orders. These orders should be agreed on by all medical personnel using the center, should be posted in conspicuous places where they will be readily available in time of need and should be clear and detailed enough so that there is no doubt in the nurse's mind about what she should do until the attending physician can be located.

There are other problems associated with the operation of centers which the governing board of each center will recognize. If the board first defines the principle which should govern the solution of the problem then applies the principle by the one best method for the achievement of the desired end each center will satisfactorily work out its own difficulties.

In conclusion, I hope that I have demonstrated that the need for community polio centers continues until vaccination against polio becomes an accepted, effective preventive measure. I wish to stress that application of the principles of good human relations and administration are essential to the proper operation of a polio center. A recommendation also seems in order. It

is fairly well established that fatigue aggravates the manifestations of polio yet it is necessary for some patients to be transported such long distances in Louisiana to reach a polio center that they are subject to considerable fatigue. To offset this adverse factor consideration should be given to the establishment and operation of polio centers in Monroe and either in Lafayette or Lake Charles.

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CHRONIC DISTENTION OF THE URINARY BLADDER; ITS CLINICAL AND THERAPEUTIC SIGNIFICANCE *

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Since the Ebers papyrus, physicians have regarded sudden emptying of the chronically distended bladder as dangerous. While this is supported by most urological textbooks, there is no evidence that it is more than a supersition. To understand how this developed one need only remember that, before modern prostatic surgery attained its low mortality, treatment of the obstructing prostate was postponed until discomfort became intolerable. The resulting vesical distention caused hypertrophy and later atrophy of the detrusor, with the formation of cellules and diverticula and led in turn to dilatation of the upper urinary tract; uremia with imbalances of water and electrolytes commonly followed. The resultant anorexia led to hypoproteinemia and vitamin deficiencies, while the patient's efforts to diminish his frequency of urination naturally caused dehydration. That any additional disturbance of the urinary tract in such a patient should lead to disastrous reactions is now easily understood, but theories concerning the noxious effects of sudden emptying of the bladder were formulated in ignorance of the factors just mentioned, and even of bacteriology. Survival of these ideas is a tribute to the authority of the printed word. The literature explains the dangers of sudden decompression of the bladder as follows:

I. Lesions of the urethra and bladder
 A. Direct trauma
 1. Hemorrhage (Finlayson 1884).
 2. Absorption of urine through traumatized area (Sedillot 1861)
 B. Indirect trauma
 1. Hemorrhage ex vacuo (Albarran (1883)
 2. Laceration of engorged vesical veins by spastic detrusor (Mercier 1861)

II. Abrupt release of intrarenal pressure.
 A. Congestion (d'Etiolles 1876)
 B. Edema (Regnault 1883)
 C. Distortion of renal tubules (Wright 1919)

III. Reflex nervous disturbances
 A. Syncope (Guyon 1879)
 B. Sudden hypotension (Pilcher 1914)

While many authors maintain that sudden decompression of the bladder is risky, they present no proof that the *rate* of emptying is important. No complete autopsy protocol is to be found, nor have the exact circumstances presumed to make abrupt decompression dangerous been determined. There is no evidence that rapid removal of the urine causes lesions differing from those seen after gradual emptying or in the untreated patient dying of prostatism, nor has anyone explained why amounts of urine as large as 14,000 cubic centimeters have been removed abruptly without ill effects. Other objections to the theories outlined are as follows:

The trauma of catheterization does cause hematuria, but the patients who

* Presented at the Seventeenth Annual Meeting of the New Orleans Graduate Medical Assembly, March 10, 1954.

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died after catheterization did not bleed to death; nor can urethral injury explain renal failure in fatal cases. Sedillot assumed that absorption of urine was important because a dog died after an intravenous injection of urine from a prostatic; bacteriology was unknown. Albarran's "ex vacuo bleeding" ignores the flexibility of the vesical wall and the lack of suction. Desormeaux's analogy to postpartum bleeding overlooks the absence of a placenta. It is unlikely that a contracting organ can tear its own veins as suggested by Mercier.

While the idea that edema or congestion from a sudden fall of intrarenal pressure can disturb renal function allows for the frequency of uremia in fatal reactions to catheterization, it is unproved. Thus, Tandler and Zuckerkandl attribute the hydronephrosis of prostatism to an elevation of the base of the bladder which pulls the ureters up against the deferent ducts, thus compressing the former; and Duttmann and Kreutzmann believe that the hypertrophied detrusor compresses the intramural ureters. If either is correct, abrupt evacuation of the bladder cannot cause a sudden alteration of pressure within the renal pelves.

Moreover, one can produce the lesions usually attributed to sudden emptying of the bladder by ligation of the dog's urethra. Hemorrhages appear in the bladder after forty-eight and in the kidneys after seventy-two hours; these are postponed for twenty-four to forty-eight hours if the spinal cord is transected first; they are not altered by sudden decompression of the bladder. They are, therefore, due, not to emptying of the bladder, but to distention and straining. Similar changes are seen in the urinary tracts of patients dying of untreated prostatism.

Elfving has observed that vesical and renal congestion and hemorrhages as well as hematuria occur in acute urinary infections, and has attributed all of the phenomena ascribed to "sudden decompression" to acute infection. It is well known that the distended bladder affords an ideal situation for bacterial growth, especially if the prostate is traumatized with a catheter. This provides a culture medium for any bacteria already present or introduced into the urethra or prostate. It is probable, therefore, that any attempt to "decompress" the bladder will merely prolong the existing stasis and so promote progress of the infection.

Sudden deaths during emptying of the distended bladder have been blamed upon instrumentation, but without satisfactory necropsy reports excluding such complications as pulmonary embolism, coronary thrombosis, and cerebral accidents.

Many writers have ascribed untoward reactions to acute hypotension secondary to an hypothetical fall in the intrarenal pressure, but have not shown any specific causal relationship between the pressure in the renal pelves and that in the blood vessels; Young and Shaw have suggested that moderate hypotension results from the relief of discomfort through catheterization, and from the relaxation which results from deciding to have something done. Elfving believes that severe hypotension is due to acute pyelonephritis; it is probably identical with bacteremic shock.

I have studied the autopsy protocols of 71 unoperated patients dying from prostatism; I could not distinguish those whose bladders had been emptied suddenly from those subjected to gradual decompression. Eighty per cent died with renal failure secondary to combinations of acute and chronic pyelonephritis with hydronephrosis. The remaining 20 per cent died of extraurinary infections, such as pyemia, pneumonia, peritonitis, and endocarditis, but every patient in the group died of infection in some form.

Two clinical series, each of 120 patients having more than 500 cubic centimeters of residual urine, were also studied. They were treated alike except that in one group the bladder was emptied suddenly, while in the other it was evacuated gradually. The mortality of treatment (4.1 per cent, and that of subsequent prostatec-

tomy (5.3 per cent) was identical in the two series, indicating that the rate of withdrawal of the urine was of no consequence.

From the evidence enumerated, I concluded that the reactions previously attributed to sudden decompression of the chronically distended bladder resulted from infection of the damaged urinary tract quite apart from the rate of evacuation of the urine. Bazy (1896), Rose (1927), Praetorius (1929), Brecher and Chwalla (1931), Homb (1948), and Hryntschak (1949) have reached essentially similar conclusions.

The work just described was done between 1928 and 1931; since that time no distended bladder has been decompressed gradually at the University Hospital, and no ill effects attributable to the rate of emptying have been seen. It has been impossible to correlate the amount of residual urine (up to 3000 cubic centimeters) with the danger of an untoward reaction. More useful clinical guides have been the general state of the patient, his renal function, and his water, electrolyte, and protein balance.

Experience has shown that the prostatic who needs special attention presents the following picture: he has long suffered from thirst and anorexia, and has lost weight; although he is thirsty and exhibits dehydration, he is afraid to drink lest he aggravate his urinary difficulties. The bladder is distended, and the urine is pale and dilute. The hemoglobin may be normal on admission, but will fall with hydration. There is retention of nitrogen, and often of chlorides, frequently with a low plasma bicarbonate (hyperchloremic acidosis). Hypoproteinemia is fairly common, but is rarely sufficient to cause edema. Hyperpotassemia is uncommon, because anorexia reduces potassium intake as renal function fails, but the serum potassium should be measured (or an electrocardiogram secured) in the seriously ill individual to detect aberrations before they become serious.

The patient is at once given a wide spectrum antibiotic, orally if possible or parenterally if necessary. Sulfonamides and streptomycin are avoided because of the poor renal function. If a cystogram shows no diverticula in the anterior wall, a trocar cystostomy is made to provide adequate drainage without infecting the urethra and prostate. If diverticula of the anterior wall are found, an inlying catheter is inserted.

Daily weighing is instituted as a simple and fairly reliable guide to hydration and nutrition. A sudden gain of weight suggests overhydration; a steady fall without excessive loss of fluid (fever, sweating, vomiting, diarrhea, polyuria) indicates that caloric needs are not being met. Fluids are forced, parenterally if necessary, with a sharp eye on the urine output and body weight. If output keeps pace with intake, allowing for the water of the food and for the insensible fluid loss, intake is maintained at 3 to 4 liters per day until renal function stabilizes. If output remains low despite an adequate intake, an hematocrit determination is made; if this shows hemodilution and there has been an undue gain of weight, the fluid intake is reduced to the level of the output and the patient is digitalized.

Hyperchloremic acidosis will correct itself as urinary output increases. However, if it is so severe as to cause Kussmaul breathing and vomiting, one should give 5 per cent sodium bicarbonate, intravenously, according to the formula of Kagan: 55 minus the carbon dioxide combining power in volumes percent, divided by four, times the body weight in pounds, equals the number of cubic centimeters of bicarbonate needed. For milliequivalents, the corresponding formula is: $27\text{-}CO_2 \div 2$, x body weight in pounds. In seriously ill patients, it is best to give one half to two-thirds the calculated dose and then to measure the plasma bicarbonate again, for fear of overcorrecting acidosis or of producing hypernatremia.

If pronounced diuresis occurs, one watches the urinary chlorides or those of the plasma lest hypochloremic shock occur.

Normal saline is given intravenously if the patient is dehydrated, but hypertonic saline is preferred if hydration has already been attained.

The serum potassium (or electrocardiogram) is watched closely for a dangerous rise in oliguria, and for an excessive fall in severe diuresis in a patient with a poor appetite, vomiting, or diarrhea. Warning signs in each include paresthesias and weakness in the extremities. Either can cause cardiac standstill and sudden death. Oliguria calls for a potassium-free diet such as corn oil and glucose or butter balls enriched with sugar, with the object of supplying enough calories to prevent utilization of bodily protein with release of potassium. Calcium gluconate (1 gram in a 10 cubic centimeter ampoule) intravenously is of value as an antagonist to potassium; the administration of small volumes of hypertonic glucose with covering insulin may reduce the serum potassium by driving some of it into the cells, but this is of very limited value in oliguria. If oliguria persists, one must resort to some form of dialysis or to the cation resins, discussion of which is beyond the scope of this presentation.

Potassium loss in severe diuresis can be met by giving 4 to 6 grams of potassium chloride in orange or tomato juice once or twice daily; if oral administration is impossible, 2 to 5 grams of potassium chloride are added to each liter of intravenous fluid, restricting the rate of administration to 180 drops per minute to avoid dangerous levels in the blood.

A rare event in uremia from prostatism is hypocalcemia. It results from binding of calcium by phosphorus retained by the impaired kidneys, and leads to general irritability, fibrillary muscular twitchings, carpopedal spasm, and a positive Chvostek's sign. Calcium is given orally, usually as milk (but as gluconate intravenously if necessary) with large doses of vitamin D, and with 1.25 to 3.75 milligrams of dihydrotachysterol daily. Attempts are also made to improve the renal function.

While frank avitaminoses are rare in these patients, their stores are usually depleted so that it is wise to give multivitamin capsules in larger than normal doses. If oral medication is impractical, suitable preparations are added to the intravenous fluids.

Anemia is corrected by transfusions of whole blood. Hypoproteinemia demands a high protein diet. Patients unable to eat may be given protein hydrolysate intravenously, although the danger of reactions makes one hesitate in critical illness. Emergency needs may be met, in the presence of anemia, by whole blood; in its absence unpooled plasma can be used, although the fact that a depleted patient will require as much as a liter a day makes it so expensive as to contraindicate all but emergency use. In less urgent circumstances if the appetite is poor, a high protein mixture such as Varco's * may be given orally as a drip through a nasal tube. Some patients will find skimmed milk enriched with skimmed milk powder more palatable, especially if flavored with vanilla or chocolate. Diarrhea may be a problem with fluid high protein mixtures.

The objective is a man who is alert, active, bright of eye, and hungry, and who has a good output of urine in relation to intake of fluid. When he has achieved this state, he is ready for a definitive operation upon the prostate, regardless of laboratory findings. An occasional patient will not respond within a reasonable period to the regimen just outlined; failure may be due to irreparable renal damage, but a long time should be allowed for free drainage and detailed attention to fluids, electrolytes, and proteins before concluding that sufficient recovery to permit a prostatic operation will not occur. If cystostomy has not been done, it should

* Whole eggs	6
Egg whites	2
Skimmed milk powder	120
Lactose or sacrose	300
Skimmed milk	1000.0 cc.
Salt	5.0 G.

One cc. contains 1.6 calories

be performed now, because advanced renal damage is more likely to improve with protracted drainage if there is no source of infection within the urethra or prostate.

With our effective antibiotics, our blood banks, and our improved but still imperfect knowledge of the importance of water, electrolytes, and nutrition, the number of neglected prostatics who cannot be salvaged sufficiently to permit a reasonably safe operation, particularly a well-executed transurethral resection, should be very small indeed.

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ACUTE PANCREATITIS; CLINICAL STUDY OF ONE HUNDRED CASES *

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Acute pancreatitis is being recognized with increasing frequency largely because of a much keener awareness of the condition and the more frequent use of the serum amylase test. The actual clinical incidence of the disease is unknown. At the Charity Hospital in New Orleans acute pancreatitis seems to be about one-tenth as common as acute mechanical intestinal obstruction and about one-fiftieth as common as acute appendicitis. This report is based upon a study of the clinical features of acute pancreatitis as observed in a series of 100 consecutive cases seen in this institution during the past decade.

MATERIAL

In the ten year period, 1943 to 1952, inclusive, there were 100 cases of acute pancreatitis seen on all services at the Charity Hospital. Only the cases of those patients are included who were proved by laparotomy or autopsy to have acute pancreatitis, or if laparotomy or autopsy was not performed, who presented a consistent clinical picture in conjunction with an increased serum amylase. Excluded from the study were 9 patients whose acute pancreatitis appeared to have been initiated by trauma to the abdominal wall or a surgical operation in the region of the pancreas, because they constitute a special group in which the pathogenesis and natural history of the disease may not be comparable to that of the usual variety of acute pancreatitis. These cases of traumatic pancreatitis have previously been reported in detail.[1]

The age distribution by decades is presented in Figure 1; the greatest incidence

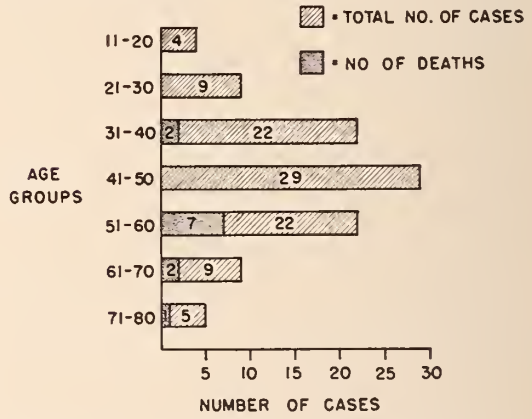


Figure 1. Age distribution by decades in 100 cases of acute pancreatitis. Patients over fifty years of age comprised 36 per cent of the material and 83 per cent of the deaths. The death rate up to and including fifty years of age was 3 per cent, above fifty years it was 27 per cent.

being in the fifth decade. The youngest patient was 16 years old; the oldest 76 years. Patients over 50 years of age comprised 36 per cent of the material and 83 per cent of the deaths.

Fifty-three per cent of the patients were males; 47 per cent were females.

Fifty-three of the patients were white; 47 were colored. This suggests a slightly increased incidence of acute pancreatitis among the whites, inasmuch as the ratio of whites to Negroes of the Charity Hospital population during the period under study was about 2 to 3.

Fifty patients had had symptoms of acute pancreatitis for more than twenty-four hours when admitted to the hospital; whereas 50 were early cases.

There were 84 cases of acute edematous pancreatitis, and 16 cases of acute pan-

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creatic necrosis. Patients were considered to have acute edematous pancreatitis if at operation or autopsy there were found fat necrosis and pancreatic induration and swelling without hemorrhage or necrosis. If autopsy or operation was not performed the case was classified with the edematous group if the clinical course was benign and if such complications as pseudocyst and abscess did not occur. Thus, the 16 cases of acute pancreatic necrosis were identified at operation or autopsy.

CLINICAL MANIFESTATIONS

Despite the lack of uniformity of the clinical picture presented by patients with acute pancreatitis, the correct diagnosis can be made in the majority of cases if the surgeon is familiar with and alert to the wide variety of clinical manifestations. Paxton and Payne [4] reported from the Los Angeles County General Hospital a series of 307 cases, and on the basis of distinctive clinical patterns classified the patients into five distinct clinical groups.

In Group I were included those patients which fit the classical textbook description of acute pancreatic necrosis. Shortly after the ingestion of a heavy meal or an excessive amount of alcohol an obese middle aged person experienced sudden onset of severe steady epigastric pain with associated nausea and persistent vomiting. Cyanosis and shock were soon evident and the disease terminated fatally in a relatively short period of time. Massive myocardial infarction and perforated peptic ulcer were seriously considered in the differential diagnosis. About 10 per cent of our patients fell into this group.

Classified in Group 2 were those patients whose signs and symptoms suggested acute cholecystitis. The pain was less severe, usually became localized in the right upper quadrant, frequently radiated to the back, and was accompanied by less persistent nausea and vomiting. In many instances there was a history of previous similar but less severe attacks. About 25 per cent of our patients belonged to this group.

The cases in Group 3 presented a clinical picture resembling acute intestinal obstruction. Severe abdominal pain, nausea, vomiting, distention and obstipation were predominant features. This pattern was evident in about 20 per cent of our cases.

Placed in Group 4 were those patients with symptoms suggesting acute peptic ulceration, penetrating peptic ulcer or acute alcoholic gastritis. While epigastric pain and tenderness were present, persistent nausea and vomiting were the most striking features. Thirty per cent of the patients were in this category.

In Group 5 were the 11 patients who entered the hospital several days after the acute attack of upper abdominal pain, tenderness, nausea and vomiting, and in whom a tender epigastric or right upper quadrant mass had appeared.

Cattell and Warren [2] have suggested the addition of a sixth clinical category which would include a considerable number of patients with acute edematous pancreatitis with symptoms which are mild, ill defined and nonspecific in localization and detail. These authors suggest that it is quite possible that this type of pancreatic inflammation is the most common variety of the disease.

The fact that one third of the patients had biliary tract disease and 7 others had a peptic ulcer made it difficult to assess the past medical history relative to previous attacks of acute pancreatitis, but it was concluded with reasonable certainty that 60 per cent of the patients had previously experienced attacks of abdominal pain somewhat similar to that of the present illness.

Alcoholism has often been described as a predisposing factor in acute pancreatitis. Twenty-two per cent of the patients in this series were considered to be chronic alcoholics, and in 13 per cent the onset of acute abdominal pain was known to have followed the ingestion of alcohol.

Four patients had acute pancreatitis within three months after the termination of a normal pregnancy, and in each instance there had been repeated similar but less severe attacks during pregnancy.

Only 1 of these 4 patients had associated gallbladder disease. Langmade and Edmondson[3] recently reported 9 cases of acute pancreatitis occurring during pregnancy and the postpartum period.

The sudden onset of severe abdominal pain was the initial symptom in over 90 per cent of the cases. In 13 cases it appeared shortly after the ingestion of a heavy meal. The pain was usually severe, steady and first involved the upper abdomen. Although in 70 per cent of the cases the pain originated in the epigastrium, upon arrival at the hospital the pain had become generalized in 16 per cent of the cases. Pain was experienced only in the right upper quadrant in 3 patients, left upper quadrant in 3, right lower quadrant in 1, and left lower quadrant in none. There was radiation of pain to the back in 38 patients, right shoulder in 2, left costovertebral angle in 3 and left shoulder in 1. Diagnostic errors occurred much more commonly in those patients in whom pain was prominent in areas other than the epigastrium.

Nausea was experienced by 90 per cent of the patients, and vomiting occurred in 82 per cent. Massive hematemesis was not observed in this series, but 5 patients noticed blood-streaked vomitus.

Diarrhea was less common than constipation, being present in about 10 per cent of the cases. A history of melena was elicited in 5 cases, but this could not be confirmed by clinical or laboratory examination.

PHYSICAL SIGNS

Only about one-half (53 per cent) of the total series of patients had a temperature of 100° F. or above. A pulse rate above 90 was present in 60 per cent of the cases. In one-fifth of the patients the initial blood pressure recording was above 160/90; while the usually accepted signs of surgical shock were observed in only 8 patients. Only 3 patients were considered cyanotic at the time of admission. One-fourth of the patients were obese.

Clinical icterus was detected in only 8 patients, 6 of whom had proven biliary tract disease. Eight of the 12 patients with an elevated icterus index had associated cholecystic disease. While jaundice may result from temporary occlusion of the intrapancreatic portion of the common bile duct by pancreatic swelling and edema it may also be due to hepatic and biliary tract lesions.

The most important physical findings were referrable to the abdomen. Abdominal distention secondary to paralytic ileus was evident in a third of the patients, but this was usually a prominent feature only in the late cases and in those with severe pancreatic necrosis. In only 1 moribund patient was it impossible to elicit abdominal tenderness. In 43 of the patients the tenderness was present throughout the abdomen, in 30 it was confined to the epigastrium, only in the right upper quadrant in 5, in the right lower quadrant in 3, and only in 1 instance was tenderness confined to the left lower quadrant. Some degree of muscle spasm was present in 82 of the patients, and rebound tenderness was elicited in 90. Diminished or absent peristalsis was noted in 82 patients.

A firm, fixed, tender abdominal mass was present in 11 cases; in 6 patients it was present upon admission, and it developed later on in the course of the disease in 5 others. The mass was epigastric in location in 7 instances, and involved only the right upper quadrant in 4. The mass was in every instance a pseudocyst or abscess, and occurred only in the acute pancreatic necrosis group. One patient presented discoloration, edema and induration of the left flank (Grey Turner's sign). Discoloration of the periumbilical area (Cullen's sign) was not observed in this series of cases.

RESULTS

There were 12 deaths in the series of 100 cases, a mortality rate of 12 per cent. Three patients were moribund on admission but are included in these totals. This mortality compares favorably with that reported from most large general hospitals (Table 1).

The major factors influencing prognos-

TABLE 1
MORTALITY OF ACUTE PANCREATITIS

INSTITUTION	YEARS	CASES	MORT. RATE
Mass. General Hospital [5]	1946-51	134	12%
Cincinnati Gen. Hospital [6]	1941-50	164	14%
Los Angeles Co. Gen. Hospital [7]	1933-46	307	33.3%
Charity Hospital (Present Series)	1943-52	100	12%

is were the age and race of the patient and the clinico-pathological type of the pancreatitis.

Patients over 50 years of age comprise 36 per cent of the material and 83 per cent of the deaths. The death rate up to and including 50 years of age was 3.1 per cent; above 50 years it was almost ten times as high (27.7 per cent).

The mortality rate among the white patients was almost twice as high as it was in the Negro group—15.1 per cent compared with 8.5 per cent.

Of the 84 patients given a diagnosis of acute edematous pancreatitis only 3.6 per cent died. The mortality was 56.3 per cent in the group with pancreatic necrosis.

The mortality rate for the group of 34 patients treated by early operation was 14.3 per cent, and for the 66 patients managed conservatively it was 10.7 per cent.

Nine of the 16 patients with acute pancreatic necrosis had early operation with a mortality rate of 33.3 per cent; but the mortality rate was 85 per cent in the small group of patients with pancreatic necrosis treated conservatively.

Almost 70 per cent of the cases of acute edematous pancreatitis were managed conservatively with a mortality rate of only 1.7 per cent; while operation in this group was attended by a mortality rate of 7.7 per cent.

These data concerning the influence of operation upon mortality are really of no statistical value because of the small number of cases involved and the fact that in the absence of operative or autopsy verification patients were arbitrarily placed in the acute edematous pancreatitis group if the clinical course was benign and if there was no evidence of hemorrhage, necrosis, or suppuration in or about the pancreas.

Major complications were observed in almost one-half of these 100 cases of acute pancreatitis. A pseudocyst developed in 5 cases, abscess in or about the pancreas in 5, external pancreatic fistula in 4, pancreatolithiasis in 3, and hydrothorax in 2. At least 19 patients have continued to have recurrent attacks of abdominal pain of sufficient severity and specificity to strongly suggest the diagnosis of chronic relapsing pancreatitis. Transient or permanent diabetes was observed in several patients.

DISCUSSION

During the years covered by this study conservative or nonoperative treatment has been considered the preferred method of management of patients with acute pancreatitis. Early operation has been favored in those instances in which the diagnosis could not be established with reasonable certainty or when there existed signs of obstruction of the biliary tract, suppuration, and cystic accumulations. It thus becomes necessary to explain how it happens that one-third of the patients with acute pancreatitis were treated by early operation during a period when the conservative management of this condition was considered at this hospital to be superior. Errors in preoperative diagnosis seem to have accounted for three-fourths of these operations. This poor diagnostic showing can in part be ascribed to the fact that during the early years of this study facilities for the performance of the serum amylase test were not available in this institution at night. A preoperative determination of the serum amylase was performed in only 18 of the 34 patients subjected to operation. A few of the operations were performed because of the opinion that early decompression of the biliary tract would favorably influence the course of the disease. Cholecystectomy plus choledochostomy was

carried out in 4 patients; cholecystostomy was done in 8 instances; and choledochostomy alone was employed in 1 case.

An analysis of these 100 cases of acute pancreatitis does not provide significant statistical data to assist in the resolution of the controversy of operative versus nonoperative treatment of the disease. It is interesting that almost one-half (16) of the 34 patients subjected to operation had only an exploratory laparotomy, a procedure which is not likely to have favorably influenced the condition of these seriously ill patients.

SUMMARY AND CONCLUSION

A clinical review of 100 consecutive cases of acute pancreatitis observed at Charity Hospital during the past decade has been presented.

The mortality for the entire series was 12 per cent; for the 84 cases of acute edematous pancreatitis it was 3.6 per cent, and for the 16 cases of acute pancreatic necrosis it was 56.3 per cent.

The diversity of the clinical and pathological manifestations of the disease has been emphasized.

One-third of the patients were subjected to early operation, in most instances because of errors in dignosis.

The treatment of choice in most cases of acute pancreatitis is conservative. Early operation should perhaps be restricted to those instances in which the diagnosis cannot be established with reasonable certainty or when there exists signs of biliary tract obstruction, suppuration or cystic accumulations.

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CURRENT STATUS OF THE SURGERY OF MITRAL STENOSIS WITH A REPORT OF TWENTY-SEVEN CASES *

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The progress made in cardiovascular surgery over the past few years has removed it from the realm of the rare and the spectacular and has brought it to a position comparable with that of other types of major surgery. Responsibility for determining whether or not operation shall be recommended in the cardiac conditions amenable to surgery rests squarely upon the shoulders of every physician who treats heart disease. The surgical mortality of cardiac surgery is now acceptably low. To advise against operation in the face of that fact is culpable and unjustified. The risk of the patient who must live with his disease is frequently much greater than the risk he would undergo if he submitted to surgical correction for it.

Any discussion of the cardiac diseases amenable to surgery properly begins with mitral stenosis, which is the most frequent condition in that category. The purpose of this paper is to review the current status of surgery for it, and to present a brief summary of our own experiences.

White [1] is responsible for the estimate that from 0.5 to 1 per cent of the population of the northeastern United States and northern Europe suffers from valvular heart disease, and that perhaps 85 per cent of all persons affected with rheumatic heart disease develop some degree of valvular deformity, most often in the mitral valve. Congenital cardiac lesions constitute only 2 per cent of all instances of heart disease. Rheumatic fever, on the other hand, causes 25 per cent of all cardiac conditions observed in hospitals, and in half of them mitral stenosis is the predominant lesion.

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These figures have practical implications. Because congenital heart lesions are so infrequent, it is best that their operative relief be undertaken only in a few special centers. It would, however, be completely impractical for all patients who require mitral commissurotomy to be treated in a limited number of centers; there are too many of them. As a result, the operation has become a standard procedure, which can be carried out in all thoracic surgical clinics in large medical centers. One should not overlook the significance of a recent report on cardiac surgery "in a community general hospital." [2]

HISTORICAL NOTE

It is undoubtedly because of the frequency of mitral stenosis that the earliest efforts to correct a heart lesion by surgical measures were directed to the mitral valve. [3, 4] In 1898, Samways made the suggestion that surgeons would soon be operating on it. In 1902, after working on the problem experimentally, Sir Lauder Brunton made the concrete suggestion that mitral stenosis be corrected surgically. He stirred up a fine commotion, which continued for a period of weeks, in the correspondence columns of the *Lancet*. During the next two decades additional experiments were conducted at Peter Bent Brigham Hospital in Boston, Harvey Cushing being among those who worked on the problem, but it was not until 1924 that Cutler, Levine and Beck actually operated for mitral stenosis. The attempt was short-lived, for the compelling reason that they had only 1 survival in 7 operations.

In the light of present knowledge it is easy to understand why these pioneering surgeons failed. For one thing, their approach was through the ventricle; whereas one of the cardinal principles which has been learned by cardiac surgeons through hard experience is that conical valvular lesions are better approached from the base than from the apical side. For another, the early surgeons did not appreciate the necessity for avoiding mitral regurgitation. When Smithy, in 1950, again attacked the valve, he failed for precisely the same reasons. In 1925, however, Souttar anticipated the modern approach, through the left auricular appendage, and his patient not only survived dilatation of the stenotic mitral ring but was greatly improved afterward.

It is sad to think of the years which were wasted between Souttar's succesful case and the revival of interest in this field in the last four or five years. His report attracted almost no attention, probably because it concerned only a single case, and nothing more was done to solve the problem of mitral stenosis by surgical measures until Bailey, Glover and their associates in Philadelphia [5] and Harken and his co-workers, [6] again at Peter Bent Brigham Hospital in Boston, demonstrated, beyond argument, that acquired valvular disease is amenable to surgery and also showed, which is just as important, that the operation is actually attended with less risk than many other procedures that are today accepted as commonplaces of surgery.

ANATOMY, PHYSIOLOGY AND PATHOLOGIC PHYSIOLOGY

The mitral valve is a bicuspid valve made up of a larger anteromedial leaflet and a smaller posterolateral leaflet. By experimental damage of these leaflets Harken and his group [7] and Hufnagel and Gillespie [8] were able to show, independently, that the anteromedial leaflet is the more important. Anatomically, this is what would be expected, since it forms approximately two-thirds of the floor of the left auricle. The observations of these two groups also bear out what has been learned of the normal functioning of the valve from in vivo studies, in contrast to earlier ideas derived from the study of the fixed heart after death: During diastole the anterior leaflet opens and its base swings medially, partly occluding the aortic outlet tract and opening the floor of the auricle, just as if a trap door had been sprung. In systole, the blood is deflected from the under surface of this leaflet into the aorta, the anterior cusp

acting, as Harken expresses it, as a baffle.

Once the mitral valve becomes fused in rheumatic heart disease, the free motion just described is restricted and the valve cannot open beyond a certain point. When, therefore, an increased flow of blood is required in response to an increased demand, it can be obtained in only one of two ways: A longer time must be allowed for filling, or the pressure in the left auricle must increase, so that the blood will be forced through faster. Both of these mechanisms are operative in mitral stenosis. When stenosis is present, pressure in the left auricle necessarily increases and, also necessarily, since the pulmonary veins contain no valves, it is transmitted back to the pulmonary capillaries. Two other mechanisms then come into play. The first is a decrease in the cardiac output. The second is pulmonary hypertension, which does not usually occur until the area of the mitral valve has been reduced from a normal of 6 sq. cm. to about 1 sq. cm., which is approximately 20 per cent of normal. Pulmonary hypertension is accompanied by narrowing of the smaller pulmonary arteries and arterioles, which undergo pathologic changes, chiefly in the form of intimal proliferation and medial thickening. As a result of these changes, there is increased resistance to the blood flow through the affected segment of the lung, and the next development is a work hypertrophy of the right ventricle.

Patients with so-called tight mitral stenosis vary considerably in the manifestation of pulmonary resistance. Increased arteriolar resistance tends to protect against the development of pulmonary edema, but its appearance is accompanied by certain disadvantages. Patients who present it are likely to show signs of a decreased cardiac output, as manifested by fatigue, exhaustion, weakness and listlessness. In the final stages of their disease, because of decompensation of the overworked right ventricle, they are also more prone to congestive failure. According to Dexter,[9] when pulmonary resistance has increased to five or ten times normal, cardiac enlargement occurs. When it has increased to ten or fifteen times normal, gross right ventricular failure is likely.

Patients who do not develop increased pulmonary resistance are prone to bouts of pulmonary edema whenever pressure in the pulmonary capillaries rises above that exerted by the osmotic effect of the plasma proteins (Starling's law). They show little or no evidence of cardiac enlargement but they present the symptoms typically associated with mitral stenosis, namely, dyspnea, orthopnea, paroxysmal nocturnal dyspnea, and hemoptysis.

As pulmonary resistance increases and the burden is shifted from the pulmonary capillaries to the right ventricle, patients who formerly presented pulmonary edema and its associated symptoms and signs begin to show improvement from that standpoint, but they present, instead, symptoms and signs of lowered cardiac output. Often the balance between the two mechanisms is extremely delicate.

Rheumatic valvular disease causes a thickening of the free edges of the mitral valve. Somewhat later, these edges become fused. Gradually, therefore, what was once a flexible slit becomes a more or less fixed and rigid ring of gradually narrowing diameter. The chordae tendinae may become thickened and shortened. The valve edges, in addition to becoming thickened and fused, may also become nodular and calcified. In most instances, the pathologic process is not complete. The periphery of the valve, close to its attachment to the auricular-ventricular ring, usually remains flexible. For this reason, restoration of valvular function can be expected after the commissures have been freed at operation.

Gorlin and Gorlin[10] have devised mathematical formulas by which the area of the valvular orifice can be calculated in the living subject. They are based upon the physical laws governing flow through fixed orifices and are dependent upon flow rate, the pressure gradient across the orifice, and certain known coefficients.

The limitation of activity suffered by patients with mitral stenosis can be correlated with the decrease of the valvular cross sectional areas but most cardiac surgeons, less scientifically, are content to estimate that when the patient has symptoms sufficiently severe to justify a resort to surgery, the mitral opening is from 0.5 to 1 cm. in diameter and barely admits the tip of the index finger.

DIAGNOSIS AND SELECTION OF CASES

The signs and symptoms of mitral stenosis are so well known that it is scarcely necessary to enlarge upon them. The most typical physical signs are a rumbling, crescendo presystolic murmur at the apex and a diastolic murmur (Graham-Steel murmur) at the pulmonic area. The diastolic murmur is presumably the result of functional pulmonary insufficiency secondary to dilatation of the pulmonary artery.

In pure (uncomplicated) mitral stenosis, cardiac enlargement is usually limited to some dilatation of the left auricle and, in advanced cases, hypertrophy of the right ventricle. If enlargement of the left ventricle occurs, mitral regurgitation, or some other type of valvular disease, should be suspected. Auricular fibrillation is common.

Electrocardiography may show changes in the P wave, as the result of left auricular dilatation, and right axis deviation may also be present. Cardiac catheterization is useful in determining the degree of pulmonary hypertension present, but it is not an essential part of the preoperative investigation. It is well, however, to perform it whenever possible at this time; considerably more data than now exist must be collected about the results of surgery for mitral stenosis, and this method permits an objective study of improvement not possible by any other test. As Baker and his associates have warned,[11] it is not entirely free from risk.

The best method of diagnosis, as Bourne[12] has stressed, is to take a really full history and to ask enough questions, in enough detail, to find out exactly what the patient can tolerate in the way of physical activity and exactly how much pulmonary congestion exercise causes. The only condition of differential diagnostic importance is mitral incompetence. The distinction is sometimes difficult, as our own experience proves, but it is essential, since at the present time there is no effective surgical treatment for the latter condition.

The present consensus is that mitral commissurotomy should be performed in patients who are disabled by their disease and whose disability tends to be progressive. Patients with mitral stenosis who are asymptomatic do not need surgery. Baker and his associates[11] state that the various manifestations of pulmonary congestion provide the commonest indications for operation, as well as the most clearcut. They grade their patients from 0, with no disability, to 4, with complete incapacity, and feel that even patients in class 4 will withstand surgery well provided that the intracardiac obstruction is relieved. According to Dexter,[9] the fundamental indication for the operation is the appearance of symptoms which occur when the mitral valvular area is reduced to 1 sq. cm. or less (tight mitral stenosis).

Most cardiac surgeons prefer to operate for mitral stenosis between the ages of 20 and 40 years, but some, such as Gerbode and his associates[4] at Stanford University, report that some of their most dramatic results have occurred in patients up to 55 years of age.

There was formerly general agreement that certain associated diseases and conditions furnished absolute contraindications to surgery for mitral stenosis. These included active rheumatic fever, active subacute bacterial endocarditis, severe aortic valvular disease (regurgitation or stenosis), and severe mitral regurgitation.

There is, however, a notable tendency in the recent literature toward increasing flexibility in the acceptance of patients for operation. Wilcox and Grace,[13] writing in 1951, stated that they would "unhesitatingly" drop from consideration patients with mitral regurgitation or evi-

dence of calcium deposition in the mitral valve. Baker and his associates,[11] writing in 1952, reported that some degree of calcium was present in 40 of their 100 cases. Results were admittedly not as good in this group, but they were poor only when calcification was really extensive. These observers felt that this pathologic change was responsible for only 3 of the 9 unsatisfactory results in their first 50 cases. They are equally liberal in respect to mitral regurgitation; their feeling is that a small amount is necessarily present whenever the orifice is small and rigid but that commissurotomy may restore almost normal functioning in closing as well as opening of the valve. Bailey and his group[14] have performed a number (28) of successful operations for mitral stenosis combined with severe mitral regurgitation, either at the same sitting or during the same period of hospitalization. They are also operating under the same circumstances for mitral stenosis combined with aortic stenosis.

Auricular fibrillation is not in itself a contraindication to surgery, though, since it occurs only in advanced disease, the prognosis is correspondingly less hopeful when it is present. It was observed in 44 of the 100 cases reported by Baker and his associates,[11] and embolism was responsible for 4 of the 8 deaths in this group.

Congestive failure is also not a contraindication to surgery in mitral stenosis provided that it has not been present too long and that it responds to medical measures. It was a complication in 13 of the first 50 cases operated on by Baker and his associates,[11] and was associated with auricular fibrillation in all but one of these.

A history of embolism is another observation which is no longer regarded as a contraindication to operation. As Dexter[9] notes, a higher incidence of this complication can be expected in patients who are fibrillating, but the risk is worthwhile, for these are the patients who are likely to receive the greatest benefit from surgery. Baker and his associates[11] take much the same position. As their series shows, the history is not always reliable: A thrombus was found at operation in only 9 of the 17 cases in which a story of embolism had been secured. Embolism was a postoperative complication, however, in 7 of their 100 cases, and was responsible for 4 deaths.

Bourne[12] makes the sound suggestion that there be careful assessment of the myocardial status before surgery is undertaken. As he points out, the myocardial degeneration produced by rheumatic disease varies enormously from one case to another and may be roughly estimated from the size of the heart. When the heart is barely enlarged, whatever symptoms the patient complains of may be attributed almost entirely to mitral stenosis. When it is greatly enlarged, the reverse is true and the symptoms are more likely to be the result of myocardial disease than of the valvular lesion. Commissurotomy would be of little if any benefit in the latter type of case.

SURGICAL TECHNIQUE

The approach to the mitral lesion is usually through the left fourth or fifth intercostal space. When the pericardial sac is opened, a pursestring of heavy silk is applied at the base of the left auricular appendage. Then a noncrushing clamp is applied and the tip of the appendage is excised, an opening being left just large enough to admit the index finger. As the clamp is released, the right index finger is slipped through the opening down to the valve and the precise conditions present are determined by palpation. The finger may be kept in the auricular chamber almost indefinitely without ill effects, but the stenotic opening of the valve, for obvious reasons, must not be occluded for more than a few seconds at a time.

There are two methods for opening the commissures of the valve, one instrumental and the other digital. Harken[7] has popularized what he terms finger fracture valvulotomy, which is dependent for success upon the possibility of opening the

commissure by digital manipulation along the original line of adherence. While this is the more popular of the two methods, it is not always possible. Not infrequently it will be found that finger fracture valvulotomy cannot be carried to success without taking an undue risk of tearing into one or the other of the mitral cusps because the tough, resilient ring resists all efforts to start cleavage along the original lines. Bailey, Glover and others of the Philadelphia school [14] frequently use a special guillotine type of knife which is maintained along the anterior surface of the index finger by means of a second glove worn over the first. They used this technique in 324 of the 501 cases included in their most recent report.

MORTALITY

It is unfair to discuss the surgical mortality of mitral stenosis unless there is a sharp differentiation between the early cases, in which the surgeons were literally pioneering, and the later cases, in which they built upon the foundations which these pioneers had laid. Thus Fell and his associates [3] lost 2 of their first 10 patients but had no deaths in the next 18 operations. Baker and his group [11] lost 7 of their first 20 patients but had only 6 deaths in the next 80 operations. Gerbode and his associates [4] lost 5 of their 44 patients, but 2 of these deaths taught them the extreme importance of liberalizing a severely restricted salt intake just before operation.

The safety of surgery for mitral stenosis was strikingly evident at the 1952 European Congress of Cardiology, [15] when Sellors reported 64 operations with no deaths and O'Neill reported a mortality of only 4 per cent in the 800 mitral commissurotomies performed by himself, Bailey, Glover and others of the Philadelphia group.

ANALYSIS OF POSTOPERATIVE RESULTS

While clinical improvement is the objective in all surgery for mitral stenosis, the results of operation cannot be estimated on clinical improvement alone. There are a number of other questions which must be asked, though some of them, such as whether or not the secondary alterations in the pulmonary vessels are reversible, can be answered only indirectly at the present time.

In an endeavor to secure the answer to these various questions, Dexter [9] made a careful study of the pathological physiology before and after operation in 12 patients submitted to surgery for mitral stenosis at Peter Bent Brigham Hospital. He found that in each instance the size of the mitral orifice was significantly increased. Mitral regurgitation was increased in only 1 case, in which, because of a technical error, the aortic leaflet was damaged. There was little increase in cardiac output at first, but as time went on there seemed to be a progressive increase. The same observation was also made by Baker, Brock, Campbell and Wood. [11] Dexter noted a dramatic fall in pulmonary capillary pressure in all cases but the one, just mentioned, in which mitral regurgitation was produced surgically. His studies showed that reduction in pulmonary arteriolar resistance and improvement in right ventricular function were not always striking, at least over the period of observation. Whether there will be improvement in these respects after a longer time has passed remains to be seen. Gerbode and his associates [4] catheterized 12 patients after operation and found an increase in cardiac output both at rest and with exercise. They also observed that the pulmonary arterial pressure was 20 to 40 per cent lower than before operation.

One point that should be emphasized is that clinical improvement, substantiated by such evidences of physiologic improvement as have been cited, is not necessarily paralleled by improvement in the physical findings. Cardiac murmurs, in particular, may continue entirely unchanged.

It is right and proper that clinical improvement should be correlated with physiologic studies, if only because subjective proof is always suspect when it is unsupported. This does not mean, however, that

clinical improvement is not the end and aim of all surgery for mitral stenosis. All of us working in this field know that it is. None have expressed it with such warm humanity as Baker and his associates [11] in a recent communication in the *British Medical Journal*. The need for operative relief in this condition, they said, had been clearly borne out by the number of patients who presented themselves for consideration as soon as their first report appeared. They came themselves and they were referred by general practitioners and cardiologists. The future that previously had seemed so bleak for these men and women, many of them actually or relatively young, was now completely changed. The individual tragedies of mitral stenosis are not fully realized until patients with the disease are dealt with in large numbers. A laborer, for instance, had been out of work for a year because of recurrent congestive cardiac failure. He had not missed a day from work in the five months that had elapsed since operation. A patient who before operation could not walk the length of the ward during convalescence missed his bus, after running 30 yards for it, then walked home, a distance of 4 miles, and had no trouble at all. One woman had a successful pregnancy after operation. Another was operated on successfully in the fifth month of her pregnancy. "It is doubtful," Baker and his associates conclude, "if we, as doctors, have appreciated how much his disability means to the patient. To be unable to hurry or climb stairs without paying a penalty, to forego healthy physical pursuits, to have to sleep propped up in order to avoid suffocating at night, and to live in constant fear of a stroke, of hemorrhage from the lungs, of drowning in his own expectoration, or of becoming water-logged, are just a few of his troubles. What a load is here for anyone to carry and what a nightmare for the apprehensive. No wonder that patients seize the chance that surgery now offers."

ANALYSIS OF CASES

Since March, 1951, we have performed 27 operations for mitral stenosis (Table 1) on 23 women and 4 men, who ranged in age from 17 to 50 years. The notably higher number of women is a reflection of the greater incidence of rheumatic fever in this sex. Twenty-three patients were white and 4 colored, but since 15 operations were done at Foundation Hospital, which admits only white patients, the figures are no indication of the racial incidence of mitral stenosis.

Every patient in the series either presented signs of cardiac failure on admission or had a story of episodes of cardiac failure in the past. In 19, a clearcut history was elicited of the bouts of pulmonary edema characteristic of mitral stenosis. One patient had an episode of this kind with each menstrual period. Twelve patients had a history of hemoptysis. As these stories indicate, our policy is to accept for surgery only the patients who have progressive symptoms referable to mitral stenosis; operation is never undertaken in patients who present the lesion but who have no symptoms and signs referable to it.

Fibrillation was not regarded as a contraindication to surgery. It was recognized that cardiac efficiency is decreased when it is present, and that there is a risk, when operation is undertaken, of thrombosis of the auricular appendage, and therefore, of peripheral embolism. This happened in the most recent case in our series, in which the procedure was carried out with unusual smoothness. The patient presented auricular fibrillation both before and after operation. Hemiplegia was noted the morning after operation, and death occurred within 36 hours. At autopsy a small thrombotic area at the base of the left auricular appendage was thought to be the origin of the massive, lethal embolus to the left middle cerebral artery.

Fibrillation was present in a total of 9 cases before operation and was noted in 13—not always the same cases—during some phase of the postoperative period. In 4 of these there was a reversion to nor-

TABLE I

ESSENTIAL DATA IN 27 SURGICAL CASES OF MITRAL STENOSIS

Case No. *	Race. Sex Age	Pulmonary Edema	Hemoptysis	Fibrillation Before	Fibrillation After	Stenotic Orifice (in Mm.) Before	Stenotic Orifice (in Mm.) After	Regurgitation Before	Regurgitation After	Duration of Follow-Up and Results to Date * *	Last Observation
1	WM, 18				X	Regurgitation only		XXXX	XXXX	7 months. Unimproved.	October 1952
2 *	WF, 30			X		?	30 x 20			27 months. XXXX improvement.	July 1953
3	WM, 34			X		Valve calcified				Death 17th postoperative day, cardiac failure.	
4 *	WF, 39	X			X	?	25 x 25			17 months. XXXX improvement	July 1953
5	WF, 38	X	X			4 x 2	25 x 20			14 months. XXX improvement	July 1953
6	WF, 43			X	X	8 x 3	25 x 15			6 months. XX improvement.	October 1952
7 *	WF, 30	X	X			9 x 1	25 x 25		X	14 months. XXXX improvement.	July 1953
8 *	CF, 30	X				10 x 8	55 x 30			12 months. XXXX improvement.	July 1953
9 *	WF, 37	X	X		X	10 x 8	20 x 20	X	X	9 months. XXXX improvement.	July 1953
10	WF, 36			X		10 x 4	25 x 15	XX	XX	4 months. XXX improvement.	April 1953
11 *	CF, 35	X	X		†	10 x 8	20 x 20			7 months. XXXX improvement.	July 1953
12	WF, 30	X	X		†	6 x 3	15 x 10			5½ months. XXX improvement.	June 1953
13	WF, 50	X		X	X	12 x 4	20 x 15			4 months. XX improvement.	May 1953
14	WF, 30	X	X			12 x 5	25 x 20			2½ months. XX improvement.	April 1953
15	WF, 44	X			†	10 x 14	30 x 20			2½ months. XXX improvement.	April 1953
16	WF, 38			X		9 x 4	19 x 14	X	XX	3 months. XXX improvement.	May 1953
17 *	CF, 30	X				9 x 4	20 x 15			Death 11th postoperative day, septicemia, thrombosis of valve.	
18 *	CF, 30	X	X			9 x 4	20 x 20	X	X	2 months. XX improvement.	May 1953
19	WM, 38	X	X			13 x 4	28 x 18	X	XX	2½ months. XX improvement.	June 1953
20	WF, 36	X	X		†	8 x 3	23 x 17			4 months. XXX improvement.	July 1953
21 *	WM, 40	X	X	X	X	12 x 4	30 x 20			3 months. XXXX improvement.	July 1953
22	WF, 43					8 x 3	19 x 14	X	XX	No follow-up. In good condition on discharge.	
23	WF, 42	X		X	X	20 x 15	20 x 15	XXX	XXX	No follow-up. Unimproved when last heard from.	
						Regurgitation only					
24	WF, 44	X			X	8 x 3	35 x 25		XX	3 months. XXX improvement	July 1953
25 *	WF, 17	X	X			3 x 6	18 x 14			1 month. XXX improvement.	July 1953
26 *	WF, 37	X	X			10 x 4	20 x 20			3 weeks. Too early for evaluation.	
27 *	WF, 34	X ***	X	X	X	6 x 4	30 x 20		XX	Died 48 hours postoperative, embolus from auricle to left middle cerebral artery.	

* Charity Hospital.

** Graded in degree of excellence from X to XXXX.

*** At period only.

† Transient fibrillation postoperatively

mal rhythm either spontaneously or after quinidine administration. Fibrillation is a disturbing complication, no matter when it occurs, but it does not mitigate against a good result if the valve has been adequately opened. The resulting decrease in cardiac output is more than offset by the increase which results from relief of the stenosis.

Two cases in this series illustrate that the distinction between pure stenosis and mitral regurgitation is not always easy to make when a patient is being evaluated for surgery. One case (No. 1) was found, at operation, to present more insufficiency than stenosis. A finger was put through the mitral ring, but the feeling that little had been accomplished was borne out by the subsequent clinical course. The patient was alive when he was last heard from, seven months after operation, but he was not doing well. In the second case in which no significant amount of stenosis was found at operation (No. 23), the orifice was estimated to measure 20 by 15 mm. No attempt at dilatation was made. The patient was discharged in good condition fifteen days after operation, but no improvement in his condition is expected. In this case the presence of a systolic mitral murmur made it uncertain whether his difficulties were due to stenosis more than to insufficiency, but operation was undertaken because it was felt that he might be benefited by relief of the stenosis even though some regurgitation was also present.

Except in these 2 cases, and in another case (No. 3) in which a great deal of calcification was present, it was possible in every instance to produce a striking increase in the size of the stenotic ring at operation. Almost universally the orifice admitted only the tip of the index finger at the beginning of the operation, thus bearing out the general opinion that patients will show severe disability when the area of the opening is less than 1 sq. cm. When the ring is increased in size to 25 by 20 mm., it is estimated that the valve area is increased to better than 3 sq. cm., which is adequate to take care of the ordinary demands of life, including moderate exercise. These estimates are based on the principle that the area increases as the square of the radius if the opening is assumed to be circular. They can be made accurately only if there is precise knowledge of the diameter of the surgeon's index finger at various levels.

Case No. 3 illustrates how calcification and rigidity of the orifice can totally defeat the objectives of the operation. In this instance the valve leaflets as well as the stenotic ring were thickened, rigid, and markedly calcified. Although the commissures were split, it was not felt that much had been accomplished. The patient died at home, apparently of cardiac failure, seventeen days after operation, and postmortem observations confirmed the operative findings.

Regurgitation is fairly frequent but is not necessarily significant. Minor degrees are well tolerated. In the 2 cases already mentioned (Nos. 1 and 23), in which it was found to be severe at exploration, no real attempt was made to dilate the ring. In 3 other cases (Nos. 9, 10, and 18) a slight to moderate regurgitant jet was present but was not increased by surgery, and excellent clinical improvement occurred in all.

Three other patients who had no palpable regurgitant jet before the ring was opened showed some evidence of it after operation, estimated as 1 plus in one instance and as 2 plus in the other 2 cases. One patient (No. 27) died of cerebral embolism, and the clinical effect of the jet could not be evaluated. The other 2 (Nos. 7 and 24) have shown satisfactory improvement, which experience in other cases suggests is likely to continue. Three patients who presented a 1 plus jet before operation presented a 2 plus jet after operation. In 1 case (No. 22) there is no follow-up. In the other 2 (Nos. 16 and 19) clinical improvement has been progressive.

Two patients died in the hospital. One death (No. 17) occurred in a 30 year old

negro woman on the eleventh postoperative day. Her fever had been persistently high after operation and Enterococcus was reported on blood culture. At postmortem a thrombus was found on the fractured valve surface. Since this experience antibiotic therapy has been employed intensively for forty-eight hours before operation and for a minimum of five or six days afterward, even if no indication for it exists. The second death (No. 27), from an embolus of the left middle cerebral artery, has already been described. The valve ring was widely opened in this case and excellent clinical improvement would undoubtedly have occurred had the patient lived. The third death (No. 3), which occurred at home, on the seventeenth postoperative day, from cardiac failure, has also been described. The dense calcification present in this case would have prevented any benefit from surgery, although the commissures were opened, had the patient lived.

In the 2 cases, (Nos. 1 and 23) in which there was more regurgitation than stenosis, no relief was expected and none was accomplished, as has already been pointed out. One patient (No. 26) has been operated on too recently for an evaluation of her condition, though she feels better. Another patient (No. 25) was operated on only a month ago, but from a preoperative exercise tolerance of only one block, she is now able to walk the length of the Midway at Pontchartrain Beach (about four blocks) without distress. This performance, incidentally, was strictly against instructions, it being our policy to insist on restricted activity for at least six months after operation, to give the myocardium a chance for stabilization. In one other case, in which operation was done four months ago, the patient could not be located for evaluation of her current status, but the degree of valvular opening accomplished suggests that the result is likely to be good.

In the other 19 patients postoperative improvement has varied from extremely satisfactory to actually dramatic. One patient (No. 7), for instance, was a cardiac cripple when she was first seen. Her condition had become progressively worse over a three-year period. She had a severe hemoptysis on the way to the hospital and was dyspneic, cyanotic, and in failure when she was admitted. When she was examined in July 1953, fourteen months after mitral commissurotomy, she reported that she no longer suffered from edema, shortness of breath, hemoptysis, or any other symptom, that she was doing her own housework, and that even dancing produced no difficulties.

Dramatic results of this kind did not occur in all of the 19 patients who showed improvement after operation, but most of them have found a new way of living and some hope in living. Furthermore, since maximum improvement usually requires from six months to a year to become evident, and since improvement, frequently of considerable degree, has been observed in 12 (of the 16) patients operated on since January 1953, that is, during the past seven months, there is ground for optimism and for hope that as time passes, the results in these cases will be even better than they now seem to be.

SUMMARY

Mitral stenosis is the most frequent of all cardiac conditions which are amenable to surgery. Mitral commissurotomy is now associated with so low a mortality that the risk of operation is less than the risk of permitting the patient to continue to live with his disability. Any physician who treats cardiac disease must therefore assume the responsibility of advising surgery, or recommending against it, in all instances of mitral stenosis.

The essential surgical aspects of the condition are briefly outlined, with special emphasis on the proper selection of patients for operation, and a report is made on 27 personally managed cases.

Note: Since this article was submitted for publication, six additional operations have been done, with no deaths, and with immediate good results in all cases.

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BONY METASTASES AND SIMULATING LESIONS IN ADULT MALES

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LOCALIZATION OF METASTASES IN GENERAL

The localization of a metastases depends on the *site* and *type* of the primary tumor.

The *site* of the primary will determine which of the three categories of capillary filters the tumor emboli will first encounter: (a) portal capillary filter in the liver, (b) pulmonary capillary filter, or (c) systemic capillary filters—chiefly bone, kidney, liver and brain.

The *type* of the primary tumor will determine whether the mechanical barrier of the first encountered capillary bed will be an effective filter. This is a function of the size of the metastatic embolus. Tumors of the type which have either connective tissue stroma or intercellular ground substance are apt to give off multiple-cell emboli because of the close union of the tumor cells. Multiple-cell size emboli will be effectively filtered out by capillary networks. On the other hand, tumors of the type which have no connective tissue stroma or intercellular ground substance have no close union of cells, and therefore, give off single cell emboli. These are not readily filtered out due to their small size, and they pass quickly into all parts of the body.[5] In this case the barrier to rapid establishment of generalized disease is biological. That is to say, that most of the emboli do not survive because of the unfavorable soil in which they become lodged. Favorable soil is homologous tissue, usually other parts of the same organ but sometimes similar tissue in other parts of the body (reticuloendothelial system). In homologous tissue single cell emboli may survive; whereas, they would not survive in other tissue. Later, when the disease is more advanced and the patient's resistance is weakened, this biological barrier is overcome; the metastases survive and grow in all tissues. The tumors of this type, i. e., having no close union of cells, are the anaplastic carcinomas, multiple myelomas, lymphosarcomas, leukemic neoplasms, and Ewings' sarcoma of bone marrow.[5]

We have discussed hematogenous metastases in general in order to show the relation of bone, as a metastatic filter, to metastatic filters in general. In those instances when the tumor emboli first enter a lymphatic vessel rather than a blood vessel, the lymph node barrier is interposed before the tumor cells reach the blood vascular system. Thereafter, they encounter *first* the pulmonary capillary bed. Thus,

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they form a special subgroup (from the hematogenous point of view) belonging to the second or pulmonary capillary filter category.

FREQUENCY OF BONY METASTASES

The special importance of skeletal metastases does not arise from their over-all frequency since this is only about 12 percent. However, in those tumors in which the systemic capillary beds are the primary filters, or in instances in which the tissue of origin is homologous with bone marrow tissues, the frequency is much higher, varying up to 100 percent.

The frequency with which a skeletal metastasis from a given organ is encountered is, of course, also a function of the frequency with which tumors occur in that organ. Thus, lung and prostatic carcinoma account for most of the skeletal metastases in man; whereas, breast accounts for most of the skeletal metastases in women.[1]

The chances of a given tumor having metastases is increased by the vascularity of the organ. Thus thyroid carcinoma is more apt to produce multiple hematogenous metastases than gastric carcinoma.

TYPES OF CHANGE IN RADIOGRAPHIC APPEARANCE OF THE BONE

From the radiographic point of view, there are two principal categories of skeletal change from metastases: osteoclastic, by action of osteoclasts; and osteoplastic, by action of osteoblasts.[4] For some cases, notably leukemic bone involvement,[6] it has been shown that the sclerosis does not follow directly but only after replacement of tumor cells by fibrosis. Except for an occasional breast tumor, lesions in females are almost entirely osteoclastic. In males, there is a more even balance between the two categories due to the large group of prostatic carcinoma, which are osteoplastic. A third category of metastatic lesions, from a radiographic viewpoint, should be made; namely, those that resemble primary bone tumors. This similarity of appearance is due to: (a) their peripheral location in the bone, which is contrary to the usual central location for metastatic foci (probably a function of statistical probability); and (b) the occurrence of periosteal proliferation and soap bubble effects, which mimic certain primary tumors.

CLINICAL—RADIOGRAPHIC CORRELATION

An important feature of skeletal metastases from a clinical standpoint is the early demonstrability of the lesions. This of course is also true of lung metastases, but is not true of the liver, kidney, brain, and internal lymph node metastases. However, not all skeletal metastases are visible early or easily. Spongy bone structure, which captures a high percentage of metastatic emboli lodging in bone due to its relatively greater vascular bed, will not show metastases early. According to Borak,[2] a destroyed area in spongy bone is not visible until about half of the thickness of bone, in the axis of the central ray, is destroyed. Diffuse lesions in spongy bone may never be visible except as generalized osteoporosis. On the other hand, any destruction of compact bone or any change in contour of a bone, especially partial collapse of a vertebra, is demonstrable immediately. Thus, in one case there may be clinical symptoms without visible bone lesions, while in the other there may be radiographic findings before clinical symptoms are manifest.

SPECIFIC SKELETAL LOCALIZATIONS

With regard to specific bones involved, it is not surprising that 80 per cent of cases with bone metastases will show spine lesions when we consider the great amount of vascular bed represented in the vertebrae. The intervertebral disc is not affected, thus providing a helpful diagnostic point in doubtful cases. The other major sites are femurs, ribs, sternum, pelvis, skull and shoulder girdle. The inherent difficulties in radiography of the base of the skull and sternum may often be responsible for missing lesions in these areas.

DIFFERENTIAL STUDY IN 184 CASES

A group of 184 cases of metastatic bone disease and simulating lesions was assembled at the Veterans Hospital, New Orleans, representing a period of about

six years. Representative examples of the same anatomical part from different cases were placed in juxtaposition for exhibit and study. The similarity of lesions of different etiology was striking and emphasizes the need to consider all diagnostic means, including biopsy, before arriving at conclusions. The cases were also grouped according to three major age categories: (I) under 40 years, (II) 40 to 60 years, (III) over 60 years. Subdivisions of these were: (A) cases showing little or no bone reaction, (B) those showing areas of increased bone density, resulting in six categories in all. Differential diagnosis as encountered in the six groups was as follows:

I. Under 40 years.
 A. Little or No Bone Reaction.
 Sarcoma: from all bone elements, lymphatic and reticuloendothelial systems.
 Carcinoma: a few from upper and lower respiratory tracts.
 Infections: tuberculosis
 Other: eosinophilic granuloma, chondroma, cysts, fibrous dysplasia, hyperparathyroidism.
 B. Areas of Increased Bone Density.
 Sarcoma: from osteoblasts.
 Carcinoma: from paranasal sinuses.
 Infections: osteomyelitis; bone abscess.
 Other: osteitis condensans, osteopoikilosis, Hodgkin's disease (Multiple poorly defined areas of medullary involvement become more sclerotic after x-ray therapy).

II. 40 to 60 years.
 A. Little or No Bone Reaction.
 Sarcoma: from connective tissue, muscle, cartilage, and osteoblasts.
 Carcinoma: from upper and lower respiratory, gastrointestinal, and urinary tracts.
 Infections: tuberculosis.
 Other: multiple myeloma (alkaline phosphatase not elevated; reversal of A/G ratio; confirmation by sternal puncture); gout; neurofibromatosis.
 B. Areas of Increased Bone Density.
 Sarcoma: from osteoblasts; associated with Paget's disease.
 Carcinoma: from prostate and upper respiratory tract. Any carcinoma may show a high alkaline phosphatase.
 Infections: brucellosis; tuberculosis; coccidioidomycosis.
 Other: plasma cell myeloma; old medullary infarction; Paget's and Paget's with multiple myeloma.

III. Over 60 years.
 A. Little or No Bone Reaction.
 Sarcoma: from osteoblasts.
 Carcinoma: similar to 40-60 group but frequency less.
 Infections: none in this group.
 Other: multiple myeloma; compression of body of vertebra, associated with senile osteoporosis. (This osteoporosis is due to **decreased** rate of osteoblastic activity in laying down bone matrix protein, probably due to endocrine deficiencies. With continued **normal** rate of osteoclastic activity there is a net loss of bone, and therefore, of calcium density. Diagnosis by exclusion of other specific causes of collapse is often necessary).
 B. Areas of Increased Bone Density.
 Sarcoma: none in this group.
 Carcinoma: prostate (usually nonreticular sclerosis, but occasionally lytic lesions; high acid phosphatase in serum; usually good response to estrogen therapy)
 Infections: none in this group.
 Other: Paget's disease (coarse trabecular structure is most common type, but cystic and non-reticular sclerotic lesions also occur; cortex thickened; often involves cranium and the hypertrophic spurs of an associated osteoarthritis; usually high alkaline phosphatase; often shows hyperplastic deposits about dental roots; bone softening occurs).

Although not encountered as a diagnostic problem in this series, mention should be made of (idiopathic) myelosclerosis. Characteristically, this is generalized, in contradistinction to most cases of malignancy and leukemia. The spleen shows marked compensatory enlargement in these cases and should not be removed.[6]

There are, of course, other tumors and diseases not encountered in this series, especially those peculiar to females and children. While it may be true that some specific lesions tend to produce individualistic roentgen findings, for the most part reliance must be placed on age, sex, distribution, the presence or absence of bone production associated with the bone destruction, and the correlation with significant clinical data.

CONCLUSION

The incidence of early skeletal metastases is determined partly by whether or not the emboli must pass through other capillary or lymphatic filters before reaching the bone. It is also determined in part by whether or not the primary tumor arises from cells which are homologous with any of the bone or bone marrow elements.

The incidence of skeletal metastases late in the course of the disease, when the first encountered filter and the homologous tissue barriers have broken down, is determined by the relative effectiveness of the several existing defense mechanisms.

Infectious and metabolic diseases may simulate metastases, but a careful consideration of all data will usually place the lesion in the correct major category. If the specific diagnosis depends upon elements of *microscopic* size, it is beyond the natural limitation of roentgenology.

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ECTODERMOSIS EROSIVA PLURIORIFICIALIS (STEVENS-JOHNSON SYNDROME) TREATED WITH CORTISONE *

MAHDI MURTADHA, M. B., CH. B.**
GLEN A. RAMSDELL, M. D.
MAXWELL C. SNIDER, M. D.

The acute febrile disorder characterized by pleomorphic inflammatory lesions of the skin and mucous membranes (Stevens-Johnson syndrome)[1] has heretofore been quite resistant to treatment. Several recent reports[2-4] have described dramatic responses to ACTH and cortisone. An equally gratifying experience with cortisone is herein reported.

CASE REPORT

E. B., a white woman, aged 61 years, was admitted to Binghamton City Hospital, on Dec. 30, 1950, with the chief complaint of a sore mouth and a cutaneous rash of three days' duration. There was no personal or family history of allergy or cutaneous eruptions. The present illness had begun on December 15, with chills, fever, and cough for which she had consulted a physician on December 23, and again on December 26; he gave her 300,000 units of penicillin intramuscularly on each occasion. Nevertheless, her eyes became inflamed, her mouth and throat became so sore she could scarcely swallow and an eruption appeared on her face, trunk, and extremities.

On admission to the hospital she appeared acutely ill; her temperature was 103° F., pulse rate 120, respirations 28, and blood pressure 140 mm./Hg. systolic and 100 mm./Hg. diastolic. In addition to acute bilateral conjunctivitis, the lips and entire buccal mucosa were acutely inflamed and studded with superficial ulcers of variable size (Fig. 1). Purpuric vesicles of pin-



Fig. 1.—Photograph of patient on admission showing cutaneous lesions in Stevens-Johnson disease.

head dimensions covered the malar area, the trunk, and the extremities. Patchy pneumonitis in the right lower lobe was demonstrated by physical and roentgenographic examinations.

Examination of the blood revealed a red blood

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cell count of 4,100,000 per cu. mm., hemoglobin 13 Gm., white blood cell count 8,500 per cu. mm. (stab 9, polymorphonuclear segmented cells 79, eosinophils 3, and lymphocytes 9). Sedimentation rate was 25 mm. (Westergren) and Wassermann negative. Urinalysis revealed 25 to 30 white blood cells per high power field, and no growth on culture. Febrile agglutinins were negative. Smears from the mouth and conjunctiva were negative on culture. Sputum cultures grew methemaglobin producing streptococci and nonhemolytic *Staphylococcus aureus*. The bone marrow showed hyperactivity with the cellular elements present in the normal ratio. The electrocardiogram showed no abnormalities.

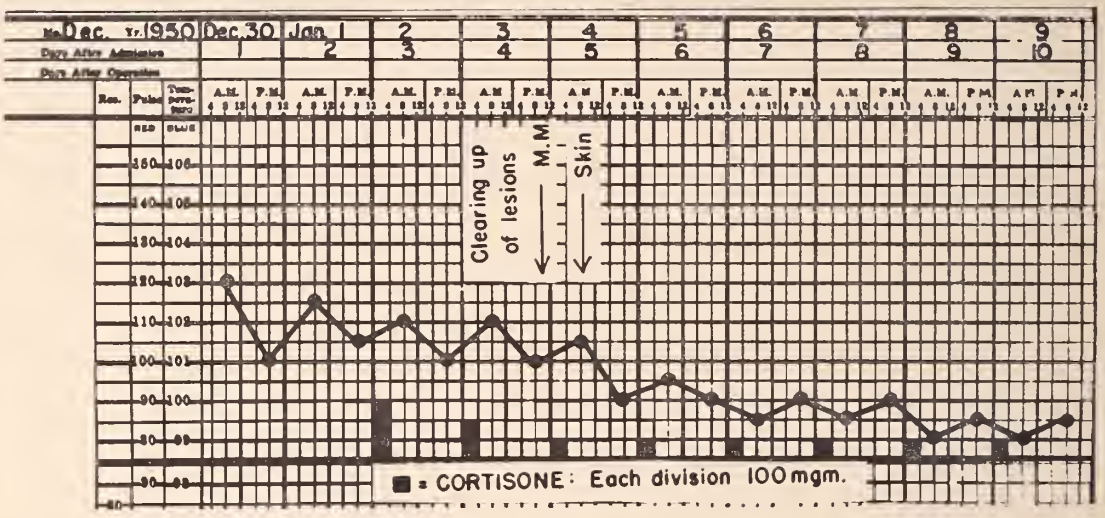


Fig. 2—Chart showing clinical course of the disease.

Clinical Course—Since aureomycin and benadryl in the usual dosage for three days had no effect, the intramuscular injection of cortisone in divided doses was begun on January 2: 300 mg. the first day, 200 mg. the next, and 100 mg. thereafter for six days. By January 4, when the patient had received 500 mg. of cortisone great improvement was obvious. The ulcerations and sloughs over the tonsils and pharynx had completely disappeared and the lesions over the buccal mucosa, tongue, and roof of the mouth had partially healed. Dysphagia had vanished. The rash as a whole was fading out and desquamating. The conjunctivitis had subsided except for one or two small areas. On January 5, the rectal temperature, which had been spiking remittently, dropped to 100° F. and thereafter remained normal; administration of aureomycin was discontinued. On January 7, the oral lesions had healed except for a small area over the hard palate. The conjunctivitis had also disappeared as did the rash several days later. By January 11, the patient was virtually without complaints, only a small crusting area remaining on the lower lip. Administration of cortisone, therefore, was discontinued on this date, the total dosage having been 1.1 Gm. over a period of nine days (Fig. 2). The following day the patient was discharged in good condition (Fig. 3).



Fig. 3—Photograph of patient on discharge showing healed lesions following administration of 1.1 Gm. cortisone.

SUMMARY

A severe case of ectodermosis erosiva pluriorificialis (Stevens - Johnson syndrome) associated with bronchopneumonia, successfully treated with cortisone, in a white woman aged 61 years, is presented.

Aureomycin and benadryl were given for three days without improvement. Forty-eight hours after institution of cortisone therapy pronounced improvement in the lesions was observed. Recovery was complete after ingestion of 1.1 Gm. of cortisone during a period of nine days.

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CHANNEL ULCER *

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JOSEPH MARINO, M. D.
CHARLES O'D. LILLY, M. D.
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NEW ORLEANS

INTRODUCTION

Peptic ulcerations of the pyloric channel present a most interesting problem, because of their variable clinical symptomatology, frequency of obstruction, gastritis, hypoacidity, weight loss, and radiological features in the absence of demonstrable craters, and the reported low incidence of malignancy despite the anatomical gastric location.[1] Recently, Texter[1] reviewed 55 cases delineating the clinical and radiological features. The present review concerns a corroboration of these features with emphasis on the clinical and radiographic triad and presentation of our experience with 21 cases.

DEFINITION

Radiologically the channel is considered to be that portion which is produced by a localized thickening of the longitudinal and circular layers of the propia muscle. Because of the blending of the muscle fibers into the adjacent antral wall it is felt that a rigid, exacting length cannot be stated. However, it is felt that it ranges from 0.5 cm. to 1 cm. Therefore, any length above 1 cm. should be regarded with suspicion[3]

CLINICAL MATERIAL

The symptomatology in 21 cases with demonstrable channel craters is outlined below (Table 1). The symptomatic triad[4] consists of: (1) Short stormy episodes of nausea and vomiting due to intermittent pyloric obstruction; (2) pain of variable character, usually relieved by food, but followed by abdominal distention and bloating sensation one to three hours after meals; and (3) weight loss of more than 10 pounds. The mean free and total gastric acidity for the group following an Ewald test meal was 30 degrees and 42 degrees, respectively.

TABLE 1
SYMPTOMS (21 CASES)

SYMPTOMS	NUMBER	PER CENT
Nausea	18	85.5
Vomiting	13	62
Epigastric pain relieved by food and followed by abdominal distention 1 to 3 hours after meals	13	62
Pain, unrelated to food	5	24
Night pain	5	24
No pain	2	9.5
Weight loss of more than 10 pounds	5	24
Bleeding	2	9.5

Radiographic evidence of a crater in the pyloric canal is diagnostic of ulceration. This was seen in all 21 cases. One of the lesions was found to be malignant. Antral gastritis or spasm occurred in 17 instances. Five cases showed abnormality of the pyloric ring and the duodenal cap was deformed in 11 cases. The ulcers were confirmed surgically in 5 cases. Significant gastric retention, although an important finding, was present in only 3 of the 21 cases in this series. In the absence of a crater, the radiological triad[2] of antral gastritis or spasm, deformity of the duodenal cap, distortion or lengthening of the pyloric canal may suggest the entity.

While the incidence of cancer of the stomach is about 5 per cent of all gastric

* Presented at Meeting of the Orleans Parish Medical Society, December 14, 1953.

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ulcerations [5] it has been reported unusual to encounter malignancy in the pyloric channel. [1] In this study it was present once representing an incidence of about 5 per cent. This suggests that the incidence of malignant ulceration in this site is comparable to that elsewhere in the stomach.

Channel ulcers are gastric ulcers, and they should be managed as such. If they do not heal or do not show evidence of marked healing within a period of thirty to forty days on a strict medical program, we feel they should be removed surgically.

SUMMARY AND CONCLUSIONS

1. Twenty-one cases of pyloric channel ulcers have been reviewed.

2. The clinical and radiological features were emphasized.

3. These lesions are located in the stomach and should be managed surgically if they are not healed or do not show evidence of marked healing after a period of thirty to forty days of intensive medical management.

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SAFETY AND PROSPECTIVE BENEFITS FROM POLIO VACCINE

The National Foundation for Infantile Paralysis has planned, and is about to carry through, massive field trials of a vaccine designed for immunization against polio. This vaccine was developed by Dr. Jonas E. Salk of the University of Pittsburgh and represents an achievement whose value is difficult to calculate. It is the result of the cumulative effort in this research on the part of some of the best investigators in American medicine.

The vaccine is a killed culture of the three types of polio virus, grown on a nutrient fluid, containing minced, monkey kidney tissue. The virus is killed by USP formaldehyde, in which the final concentration in the solution is 1:4000. After six to twelve days of the action of the formaldehyde, it is neutralized by the addition of sodium bisulphite. Following this, a system of tests has been set up for the determination of the suitability of the vaccine for use. These tests are for safety and sterility and involve tissue culture, inoculation of monkeys, mice, rabbits, and guinea pigs.

In preparation for the production of vaccine to be used on a national scale each batch of vaccine is to be tested by three laboratories, each of which is carrying out the complicated procedures for safety and sterility. The laboratories are that of the manufacturer, secondly, the Virus Research Laboratory of the University of Pittsburgh, directed by Dr. Salk, and the Laboratory of Biologics Control of the National Institute of Health. Each batch must receive unconditional safety approval from all three before it is released for packaging and shipping to the field trial areas.

These arrangements have been reviewed and concurred in by the members of the special Advisory Committee on Active Immunization of the National Foundation for Infantile Paralysis. The Chairman of this Committee is Dr. Thomas N. Rivers, Director of the Hospital, of the Rockerfeller Institute for Medical Research, and one of the leading virologists of the nation. The other six members are equally well qualified in closely associated fields.

Seldom has any material for immunization been prepared with as much background of research and with as much care for protection as this one.

Previous to the planning of field trials, the vaccine had been given to about 8000 children and adults. Elaborate investigations have shown that production of antibodies in individuals who did not possess them previously was initiated by the vaccine, and that among those who had anti-

bodies before injection, an increased amount of antibody was shown. It had previously been shown by elaborate researches that the three types of polio virus follow the established laws of immunity. Reasonably, therefore, Dr. Salk and his associates anticipate that antibody production would be expected to be accompanied by protection against tissue invasion and paralysis. It is this hoped for protection against paralysis which field trials will show, and not, as has been suggested, "the safety of the vaccine."

At this point in the preparations which were going on over the nation in forty-four states, a radio authority announced, on April 4, that the vaccine "may be a killer." The basis for such a comment was stated to be that in the process of testing for safety and sterility some of the batches of vaccine were found to contain live virus. This comment on a national broadcast, even though it came from one who is not infallible, has occasioned concern on the part of the boards of health, on the part of those sponsoring the field trials, and also, on the part of the parents of the children who might receive the vaccine. Explanations from Dr. Salk and those associated with him have been clear and reassuring. As might have been expected, the explanation is that a system of controls was set up to insure proper testing of each batch of vaccine, and this system was doing just what it was set up to do, that is, eliminating what was not suitable. The course of events is actually a compliment to the care, forethought and scientific precision of those in charge of the whole endeavor.

When the field trials were proposed, a committee of the Louisiana State Medical Society, in cooperation with the Louisiana State Board of Health, approved the proposed use of the vaccine. When the radio comments produced an acute concern about the safety of the procedure, this Committee issued a statement from the Louisiana State Medical Society, stating in part:

"We still believe that in view of all information known about this vaccine that it holds out good prospects for benefits to be derived from its use, and if our people desire it on a voluntary basis they should not be denied the privilege of receiving it."

An additional phase of the problem has been commented on by Dr. Salk himself in a recent address before the New Orleans Graduate Medical Assembly, as follows:

"Because of the fact that virus for vaccine is propagated in cultures of monkey kidney tissue, some have wondered whether or not immunization with such vaccines may have some damaging effect upon the kidneys. Although, on a priori grounds, there is little reason to believe that this might occur, this question has been the subject of continued study, in a variety of ways, and there are no indications thus far of any harmful effect upon the kidney, either in experimental animals or in man."

It is understood, at the time of this summary, many hundreds of individuals had been examined without any evidence of kidney involvement.

It seems clear from the facts in the situation that the vaccine offers the best prospect of protection against the paralytic phase of polio that has existed up to now. In this, as in many other instances, medical problems should be decided by physicians. It is hoped that the field trials will proceed as planned and that the results will be illuminating and helpful.

ORGANIZATION SECTION

The Executive Committee dedicates this section to the members of the Louisiana State Medical Society, feeling that a proper discussion of salient issues will contribute to the understanding and fortification of our Society.

An informed profession should be a wise one.



PHILIP H. JONES, M. D.
President
1953 - 1954

Dr. Philip H. Jones, our President during the current year, has been most energetic and ever alert to the needs of our Society. His insight concerning medical matters has been keen and he has been ever watchful for the possibility of any problems which might be detrimental, in any way, to organized medicine and our Society. We have been extremely fortunate in having a man like Dr. Jones, with his unsurpassed capabilities and breadth of vision, combined with his willingness and desire to serve, as our leader for the past year. It has, indeed, been an exceptionally busy year, filled with many problems necessitating, at times, the most mature and considered action. In solving these problems, he has always kept in mind what was best for the public and for our Society, and in doing so has merited the respect and confidence of our members. Dr. Jones has conducted the affairs of the Society on a high and dignified plane, always creating interest and eliciting attention and cooperation from his fellow members. He has always had the courage of his conviction, but on the other hand, has always been considerate of the opinions of others and has gladly welcomed the advice and counsel of his colleagues.

Dr. Jones has energetically and with his usual ability and great resourcefulness, most ably represented the profession at many state and national conventions and conferences. He has been extremely active in participating in the district and parish society meetings, along with many hospital staff meetings. Wherever duty called, Dr. Jones has responded and unequivocally defended organized medicine and the profession in a manner which always left behind that feeling of good public relations and fellowship between our profession and the lay public, for which we are always striving.

Dr. Jones was born in Jackson, Louisiana, and in 1907 his parents moved to Baton Rouge, where his father, Dr. Philip Huff Jones enjoyed a large medical practice. His mother, Mrs. Annabelle Smith Jones, is still living in Baton Rouge at the age of 92 years.

He received his early education in the Baton Rouge Public Schools, and in 1916 received his B.A. Degree from the Louisiana State University. His M. D. degree was received from Tulane University in 1920, being the third generation of his family to graduate in Medicine from Tu-

lane; his grandfather graduating in 1852 and his father in 1878.

His internship was started at Charity Hospital in 1920 and four months later his training was interrupted to accept a Rhodes Scholarship and he earned his Ph.D. Degree from Oxford University in 1924. His studies, while abroad, included the Clinics of Vienna, a course in dermatology in the Hospital of St. Louis, Paris, and cardiology in the London Hospital and the London Heart Hospital. He returned to New Orleans, where he completed his internship in 1925, and served as House Physician at Charity Hospital from 1926 until July, 1928. He commenced private practice, specializing in internal medicine, in 1929.

Dr. Jones has served on the teaching staff of Tulane Medical School, as full time instructor, part time instructor; as assistant professor of clinical medicine and associate professor of internal medicine.

Dr. Jones, while an instructor in the School of Medicine of Tulane University in 1934, the year of its One Hundredth Anniversary, was signally honored by being selected by the graduating class as outstanding among the active faculty because of his solid scholarship, intellectual precision and professional reliability.

He has taken quite an active part in organized medicine having held important offices in the Orleans Parish Medical Society, and served with distinction and honor as its President in 1945. He has likewise served the Louisiana State Medical Society in many capacities, and was elected its President in 1952, to be installed at the 1953 Annual Meeting.

He is a member of the American and Southern Medical Associations, is a Fellow of the American College of Physicians, and was certified by the American Board of Internal Medicine in July, 1938. He is a member of the Nu Sigma Nu and A.O.A. Fraternities.

He was in the S.A.T.C. at Tulane University during the first World War, and in World War II he served as examining physician for the local Boards; also as a member of Medical Advisory Board No. 1, and as Assistant Chief of Medical Service in the emergency unit formed at Charity Hospital in New Orleans.

Dr. Jones has contributed many scientific papers to our local and national journals, and has been the author of a series of chapters on infectious diseases in one of our reference books on medicine.

He is a member of the visiting staffs of the Southern Baptist Hospital, having served as its President. He is serving as a member of the Board of Administrators of the Charity Hospital at the present time.

He takes quite an interest in civic and community problems, having served just recently as Chairman of the Medical Committee of the New Orleans Chamber of Commerce, in which position he did an outstanding job. He is also a member of the Louisiana Health Council, contributing his talents and time to this worthwhile organization.

Dr. Jones has served as Editor of the Journal of the Louisiana State Medical Society since 1948, and has rendered efficient service, and the members of our Society owe him a great debt of gratitude for his untiring interest as Editor of the Journal.

Dr. Jones has been very active in our recent fight against the licensing of Chiropractic in our state, and has been working unceasingly in promoting our educational program of the public against this cult. If the medical profession, as a whole, would do just half as much as Dr. Jones is doing to defeat the chiropractic menace, we would have no fear of the results to be obtained in Baton Rouge at the coming session of the Legislature.

The members of our Society have been very fortunate, indeed, in having Dr. Jones as their President during the past year, and it is comforting to know that we will still be permitted to enjoy his mature judgment and wise counsel as a member of the Executive Committee. It is our sincere hope that he will continue his keen

interest in organized medicine throughout the coming years. Please be assured, Dr. Jones, that we appreciate your wonderful service to our Society.

REPORT OF PRESIDENT

The past year has been one of many activities and complex responsibilities for the officers of the Louisiana State Medical Society, the Executive Committee, and for the standing and special committees.

Organizational Activities

The Society was represented at the meeting of the A. M. A., in June 1953, in New York. At this meeting, appearances were made before the Committee of the A. M. A. on Medical Service and Hospitals, in regard to your protest on the requisites for an approved internship. The effect of these representations made along with those of three other states was to neutralize the regulation for the present, and to procure reconsideration of the whole field. For the present, and possibly for the future, an embarrassing situation has been avoided which would affect all the hospitals of the state except two. Also, at this meeting, there were attendances at the sessions of the House of Delegates, and at sessions devoted to the state presidents and secretaries. At the latter, matters of organization detail were discussed, and much was learned which will be of benefit to the Society.

A similar meeting of the A. M. A., in St. Louis, was attended. Sessions of the House of Delegates were followed, and conferences of state officers were found beneficial.

National Conferences

Dr. Robyn Hardy was sent as representative to the regional conference for veterans' affairs, sponsored by the A. M. A. at Dallas. In this conference an effort was made to inform the several state societies of the status of veterans' hospitalization of patients with nonservice connected disabilities. Its object was to coordinate the planning in the several states to meet this problem. The situation is urgent because of the growing number of veterans, the probable increase in their need for hospitalization, and our knowledge of the fact that with ease a greatly expanded hospital program on the part of the Veterans Administration could be suddenly authorized to care for families as well as veterans. In such a process, State Medicine could become established.

Dr. J. P. Sanders represented the Society at the Rural Health Conference in Dallas. The influence and beneficial effect of this Conference has been increasing year by year, and its activities are ultimately going to be helpful to rural areas. Under its stimulus, progressive improvement in rural medical care is being noted.

Our immediate Past President, Dr. Will Barker, attended the Rural School Health Conference near Chicago. His report shows the value of the activity of this group, and its benefits in promoting rural health.

Dr. Robyn Hardy attended the Public Relations Conference of the A. M. A. in Chicago. His report is another indication of the need for our continued support and concern in this field.

The American Medical Education Foundation met in Chicago last February, and the Society was ably represented by Dr. Edgar Hull. This Foundation is organized medicine's effort to supply funds for medical schools and to avoid federal government subsidy.

Activities Within The State

The President and Secretary attended the annual meeting of the Louisiana Health Council in Alexandria and found the sessions stimulating and productive of better relations for the State Society. The Louisiana Health Council is the most valuable forum in the state on health matters, outside of our own Society, and it seems most desirable that a close relationship be encouraged and maintained. The public in many areas is in need of a means by which medical aims could be interpreted and realized within the community. The Louisiana Health Council gives promise of great value in this field.

The sessions of the Legislative Commission on Workmen's Compensation Law

were attended, with Dr. Roy Harrison as spokesman for the Society. The position of Organized Medicine in this controversial field was adequately explained and admirably upheld. The position taken, in substance, was that the Civil Courts were preferable to a commission. It was also explained that the position of the doctor in the case should receive greater financial protection, but otherwise, the position of the doctor in lawsuits for compensation should be unchanged.

The officers attended the meeting of the Louisiana Academy of General Practice, in Alexandria, last fall. The meeting was well attended and enthusiastic. This group now, as in the past, is upholding the best traditions of medicine in Louisiana and enjoys the continued cooperation of the Louisiana State Medical Society.

Meetings of various parish and district societies have been attended when possible, and in eight of these opportunity was additionally offered to meet and speak to legislators against the bill to license chiropractors.

The Executive Committee was called into session in June to consider and act upon current matters and those referred from the House of Delegates. It was also called on December 12, 1953, to consider the chiropractor situation and related problems. At this meeting, authorization was granted to the Committee on Public Policy and Legislation to employ a firm of public relations consultants, Gould, Blieden & Manley, of Baton Rouge. It was also decided that donations should be requested from the membership to meet the necessities of the educational campaign against chiropractors, which has been and is currently being waged. The Committee was polled once over the telephone for a decision about supporting legislation to license physiotherapists, and to investigate chiropractic. The collected vote was against the endorsement of these projects.

Many of the standing and special committees have had more than the usual amount of work to do, and my sincere appreciation is expressed to them for their efforts in behalf of the Society. Of particular mention are the Committee on Public Policy and Legislation with Dr. Henry Jolly as Chairman; the Committee on Child Health, with Dr. Sims Chapman as Chairman; the special Committee on Mental Hospitals to work with the State Board of Institutions, with Dr. Edmund Connely as Chairman; the Committee on Veterans Affairs, with Dr. Pascal Danna as Chairman; the Committee on Public Health, with Dr. J. D. Martin, Chairman; the Cancer Committee, with Dr. Ambrose Storck, Chairman; and the Council on Medical Service and Public Relations, Dr. Robyn Hardy, Chairman.

Activity Against The Passage Of The Proposed Law To License

A considerable proportion of the activities of your Society's officers and many members has been absorbed in the past year in an effort to educate the public and secure legislative support against the Chiropractor Bill. This has been carried on in cooperation with the Committee on Public Policy and Legislation, Dr. Henry Jolly, Chairman, and it is evident that although the same problem has been presented every two years since 1922, our opposition is not adequately understood. It is also evident that the immunity we have enjoyed from the ill effects of this cult is more gravely threatened than previously. Accordingly, strenuous efforts have been, and will continue to be necessary over a period of years, to acquaint our membership, to educate the public, and to arouse public feeling in such a way as to provide adequate local enforcement of the Medical Practice Act.

It has been an honor and a pleasure to serve as President of the Louisiana State Medical Society. What has been accomplished was only made possible through the cooperative efforts of all concerned. I wish to thank particularly for their advice and support: Dr. C. Grenes Cole, Secretary-Treasurer; Dr. Will Barker, Dr. Henry Jolly, Dr. Roy Harrison, Dr. Robyn Hardy, and Dr. R. H. Riggs. The efficient office force, particularly Miss Annie Mae Shoemaker has contributed greatly to the success of our collective efforts.

RECOMMENDATIONS

The necessary activities of the Society are greater than its financial income. It is recommended consideration be given to increase in dues.

A recent decision of a Civil District Court in Louisiana has resulted in changing the effect of the statute of limitations for malpractice suits from one year to ten years, during which time a physician, dead or alive, can be sued for breach of contract. It is recommended that the House of Delegates endorse the efforts of our legal advisor, Mr. St. Clair Adams, to have a law passed which will return us to our previous status.

The multiplicity of insurance information blanks for which the fee is not paid by the company is a clerical hardship, and a tax on the time of the physician. It is recommended that a uniform insurance blank be endorsed by the House of Delegates, and that its establishment by legislative Act be sought.

The Society has had the services of public relations consultants (Messrs. Gould, Blieden & Manley) in the present campaign against chiropractors. This need may continue. It is recommended that the House of Delegates discuss the matter with a view to having a committee appointed to study the problem and report at the next meeting of the Society.

Because of the difficulties in securing accommodations at the place of the Annual Meeting, it is recommended that plans for meetings be made several years in advance.

The growing cost of malpractice insurance and the recently manifest tendency of juries to give greatly increased damages have produced a situation which affects every physician. It is recommended that the House of Delegates request constituent societies to devote one meeting each year to this phase of the practice of medicine.

The value of a School Health program has been demonstrated, and the productive part of each such project is the School Health Committee of the local society. It is recommended that the House of Delegates request each constituent society to appoint a School Health Committee from its membership, and that the whole Society cooperate with the School Health program.

The ultimate solution of the handling of the chiropractor problem is going to depend upon public support. It is recommended that the House of Delegates request the local societies to continue their special committees in this educational campaign.

PHILIP H. JONES, M. D.
President

MEDICAL NEWS SECTION

CALENDAR

PARISH AND DISTRICT MEDICAL SOCIETY MEETINGS

Society	Date	Place
Calcasieu	Fourth Tuesday every other month	Lake Charles
East Baton Rouge	Second Tuesday of every month	Baton Rouge
Morehouse	Third Thursday of every month	Bastrop
Natchitoches	Second Tuesday of every month	
Orleans	Second Monday of every month	New Orleans
Ouachita	First Thursday of every month	Monroe
Rapides	First Monday of every month	Alexandria
Sabine	First Wednesday of every month	
Second District	Third Thursday of every month	
Shreveport	First Tuesday of every month	Shreveport
Vernon	First Thursday of every month	

WARNING

DON'T BE A SUCKER

LOUISIANA SAFETY ASSOCIATION wishes to advise all civic organizations and fraternal organizations in the State of Louisiana that two promoters are canvassing civic clubs in various towns for the purpose of selling safety materials under the guise of setting up safety campaigns in local cities in conjunction with the civic organizations.

The deal made to the civic organization is that 50% of the money goes to them to pay for their material and their time; and the other 50% goes to the civic organization for some charitable use. An operator has been in Marshall, Texas, and approaches have been made to several civic clubs in Shreveport.

Caddo Bossier Safety Council of Shreveport and Louisiana Safety Association, both chapters of the National Safety Council do not sanction or foster the exploitation of safety campaigns in communities.

It is requested that the members of your organization be advised of the solicitation program.

———o———

SOUTHEASTERN REGION MEETING OF THE AMERICAN COLLEGE OF PHYSICIANS

Dr. E. Dice Lineberry, of Birmingham, Governor of the American College of Physicians for Alabama, has scheduled a meeting of the Southeastern Region for October 15 and October 16, 1954, at the Edgewater Gulf Hotel, Edgewater Park, Mississippi. A special invitation is extended to members of the College and other physicians of Louisiana. Anyone wishing to appear on the program should contact Dr. Howard Holley, 620 South 20th Street, Birmingham, Alabama, who is the Chairman of the Program Committee.

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ANNUAL MEETING AMERICAN MEDICAL ASSOCIATION

San Francisco, Calif.
June 21-25th, 1954.

The Missouri Pacific Lines offer through air-conditioned streamline service to San Francisco, with no change enroute. Daily convenient schedules with various sight-seeing attractions enroute.

Many of the famous National Parks are located in territories served by this route where stopovers can be made.

For further information—contact: Mr. J. T. Leze, General Agent or City Passenger Agents R. J. Conley and E. Mitchell, at RAymond 8244.

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ANNUAL MEETING DIABETES ASSOCIATION OF LOUISIANA

The annual meeting of the Diabetes Association of Louisiana will be held with a luncheon during the State Medical meeting at a time and place to be designated on the first day of the meeting.

———o———

IT ISN'T SECOND CHILDHOOD— IT'S THE EFFECTS OF AGING ARTERIES

It isn't second childhood that oldsters go through—it's the effects of aging arteries.

But, one shouldn't let these effects distract one from the charm and wisdom underneath, according to Dr. John E. Eichenlaub, Urbana, Ill. A real understanding of the problem of why old people act differently helps one to enjoy the oldsters' company more, to keep feelings from being hurt, and to make oldsters happier and more content.

"You can't understand old people without understanding the changes in mind and personality that go with extreme age," Dr. Eichenlaub wrote in Today's Health magazine, published by the American Medical Association. "These changes don't always happen the same way or at the same age.

"A person is as old as his arteries, not as old as his years. Since the arteries that supply different parts of the brain wear out at different times and to different extents in different people, every person has his own way of showing age. But some changes almost always take place, and anyone who is really old, instead of in a sort of advanced middle age, is likely to have them."

———o———

REPORT CORTISONE AIDS IN TREATMENT OF BELL'S PALSY

Speedy recovery from Bell's palsy following the use of cortisone was reported in a recent (January 9) Journal of the American Medical Association. Bell's palsy is a common disorder of unknown origin which causes paralysis of the facial nerves and muscles. It usually takes many months to effect recovery. Little or no progress in its treatment has been reported until recently.

Two cases of immediate, complete recovery from the disorder were reported by Drs. William P. Robinson and B. F. Moss, Augusta, Ga. One case was that of a 13-year-old girl who recovered within two weeks after cortisone therapy was instituted. The second case was that of a 5-year-old boy who recovered within three weeks after treatment with cortisone was begun.

"The use of cortisone therapy in these two patients was followed by prompt recovery," the doctors wrote. "No patient suffering from Bell's palsy seen previously in our department over the last 15 years has recovered in less than several months.

"We are encouraged by the results of cortisone therapy in these two patients suffering from the early stages of Bell's palsy. Obviously, we cannot draw sweeping conclusions from observations so limited. We feel justified in the hope that others will test the use of cortisone in this disorder."

The doctors are associated with the department of psychiatry and neurology, Medical College of Georgia.

———o———

NEW PLASTIC PLOMBE FROM DENMARK COLLAPSES LUNG FOR TB TREATMENT

A new plastic filling material (plombe) developed in Denmark for partial lung collapse in treatment of pulmonary tuberculosis has been

made available to the medical profession in the United States by Lakeside Laboratories, Inc. here.

In plombage the chest is opened, part of the lung around the lesion is collapsed, and the filling material is left permanently in place. This promotes healing and prevents the spread of the lesion. The method has advantages over thoracoplasty, an operation in which ribs are removed and the entire lung collapses. Plombage provides selective collapse and avoids deformity and complications. The ribs are saved. As the blood supply comes from the ribs, plombage keeps intact the natural barriers against the spread of tuberculosis.

Called Polystan Plombe, this new type of high-molecular plastic is said to offer distinctive advantages over previously used materials. Bone and wax materials, for example, had to be abandoned because they caused foreign body reactions. Other plombes resembling "ping-pong" balls have been too mobile and inappropriate in size. The new Polystan Plombe is unaffected by body fluids and causes no foreign body reaction.

VOMITING IN CHILDREN MAY BE SIGN OF EMOTIONAL DISORDER

Vomiting may be the first and only indication of an emotional disorder in an infant or child, in the opinion of Dr. Paul C. Laybourne, Jr., Kansas City, Kan.

"The infant has only a few ways in which to express undue emotional tension," Dr. Laybourne wrote in a recent issue of the American Journal of Diseases of Children, published by the American Medical Association. "He can refuse food, cry excessively and vomit."

Much psychological vomiting in infants and children is the result of a disturbing atmosphere at home, Dr. Laybourne pointed out, stating:

"It is obvious in such cases that direct treatment of the baby or child is unnecessary. Psychological vomiting in infants is easily diagnosed by the simple expedient of hospitalizing them. Almost universally the vomiting stops with the removal of the baby from the disturbing environment of the home. This observation helps in making a differential diagnosis between organic and psychologic disease."

—o—

BOOK REVIEWS

Source-Book of Medical Terms; by E .C. Jaeger, Springfield, Illnois. Charles C. Thomas, 1953, pp. 145. Price $5.50.

This is a very useful book, especially for Freshmen and Junior medical students, for in these two years particularly they are inundated with new words. Knowledge of combining forms will greatly facilitate the acquisition of a medical vocabulary. If this book is used to go to sleep by and glanced at a few minutes each night, substantial help will be derived by the medical neophyte. The author has devised very good illustrations to show the ancient and modern meanings of medical terms.

In his introduction he states that he has found many inaccuracies in medical dictionaries and has corrected them. Alas! even Homer nods and it is regrettable that Dr. Jaeger himself has made some errors. Thus, in the very first entry he gives aasmos, Gr. asthma. Reference to Liddell and Scott's Greek Lexicon, his authority, indicates that aasmós, (aázō to breathe through the mouth) means a breathing out (p. 1) whereas asthma, atos, tó (áō to blow) means a short drawn breath, panting (p. 231). This incorrect derivation is repeated again on the same page by Dr. Jaeger although on p. 17 he gives asthma properly as from Gr. asthma. Again, on p. 137 he says: "The Latin word *trunco* means to *lop off, to cut off.*" *Trunco* is the first person present tense indicative and means *I* lop off, *I* cut off. *Truncare* is the infinitive form and means *to lop off.*

Nevertheless he has gathered much useful information and the book can be recommended to its designated audience; few medical students of today have had intimate contact with the ancient tongues.

VINCENT J. DERBES, M. D.

Hippocrates on Intercourse and Pregnancy; an English translation of On Semen and On the Development of the Child; by Tage U. H. Ellinger, New York, N. Y., Henry Schuman, Inc., 1952, pp 128. Price $2.50.

A first time English translation of a subject that should be of historical interest to all concerned.

I. L. ROBBINS, M. D.

Roentgenology in Obstetrics and Gynecology; by William Snow, M.D., Springfield Illinois, Charles C. Thomas, 1952. Pp. 363. Price $10.50.

This is the second edition of Dr. Snow's text on obstetric roentgenology in which there has been added the use of x-ray in gynecology also. There is excellent and complete coverage of pelvic architecture, fetal development, and the pathological changes which occur. The author has had wide experience with the problems of obstetrics and has devised a simple and effective method of x-ray pelvimetry.

Some obstetricians may be at variance with his views on the purely obstetric material which he has presented and possibly this detracts, to a certain

extent, from the text as a whole. However, the book is complete and well illustrated with a considerable number of excellent roentgenograms and can be recommended as a reference work for its fine radiographic presentation and interpretation.

GEORGE T. SCHNEIDER, M. D.

Clinical Neurology; by J. M. Nielsen, 3rd Edition, New York, N. Y., Paul B. Hoeber, 1951, pp. 709; price $10.00.

The third edition of Dr. Nielsen's text book continues to serve as a comprehensive guide to clinical neurology especially adapted to the needs of the medical student. The coverage is complete including all the clinically important disease entities. The text is well illustrated especially with photographs of pathologic specimens. The style is clear, and the author's use of personal case material helps to enliven the presentation of clinical data. The new edition keeps abreast of recent developments in the therapy of neurological disease. Especially helpful are the sections on the newer diagnostic techniques of angiography and electromyography.

A critical note may be offered in regard to the section on aphasia. The author, one of the country's leading contributors to the literature on this subject, acquaints the reader thoroughly with the clinical phenomena of aphasia, a topic often slighted in other texts. However, the reader may be lured into a rigid localization-bound approach to aphasia by the author's seemingly convincing but rather mechanistic viewpoint.

A. W. EPSTEIN, M. D.

Operating Room Technic; by St. Mary's Hospital, Rochester, Minnesota, 4th ed. Philadelphia, Pa., W. B. Saunders Co., 1952. Pp. 345. Price $6.50.

The Operating Room—Instructions for Nurses and Assistants, written in 1924, was revised for the third time in 1937. The present volume, the fourth edition, has been completely rewritten. Because of recent advances in surgery new procedures have been added and others revised.

The book outlines in detail the basic principles of aseptic technic and general principles of scientific management as practiced in the operating rooms of St. Mary's Hospital at Rochester, Minnesota. The stress is simplicity and uniformity of procedure for optimum skill. Restoration of the patient to health is the purpose, the climax, and the final end of the teams that function daily in the operating rooms through the world.

St. Mary's Hospital, operated by the Sisters of St. Francis of the Congregation of Our Lady of Lourdes, is a general hospital with a capacity of 850 beds and 60 bassinets. The patients are cared for in the departments of medicine, surgery, neurology, psychiatry, obstetrics, pediatrics and communicable diseases. The medical staff of the hospital is the staff of the Mayo Clinic.

Operative procedures are clearly and concisely outlined. The title of the operation, the definition of the operation, and the preparation and procedure in the operating room is given. There are eight chapters in the book, including general surgery with its sub-specialties, and orthopedic surgery, neurologic surgery, and procedures in urology and peroral endoscopy.

Development in the basic and advanced educational programs for nurses in the operating room are described. Diagrams of the position of the surgical team during various operations, illustrations of the patients in position for surgery, photographs of instrument arrangements, illustrations and measurements of linens have been included.

This book has a valuable fund of information for both the medical and nursing personnel. The volume should be of assistance to all who are interested in the field of operative surgery.

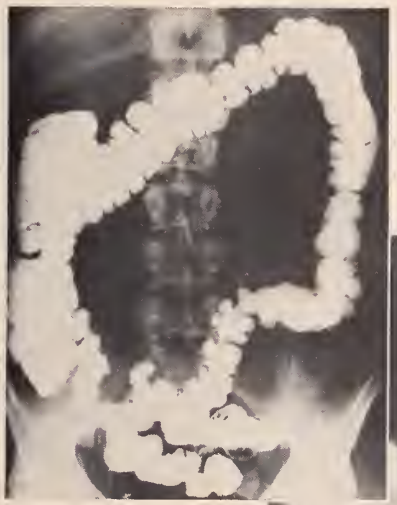
GEORGE W. HAGERMAN, M. D.

PUBLICATIONS RECEIVED

W. B. Saunders Co., Phila.: Manual of Clinical Mycology, by Norman F. Conant, Ph. D., David Tillerson Smith, M. D., Roger Denio Baker, M. D., Jasper Lamar Callaway, M. D., and Donald Stover Martin, M. D. (2nd. Edit.); Mayo Clinic Diet Manual, by The Committee on Dietetics of the Mayo Clinic (2nd. Edit.); Current Therapy 1954, Latest Approved Methods of Treatment for the Practicing Physician, edited by Howard F. Conn, M. D.

Simon and Schuster, N. Y.: A Doctor Talks to Women, by Samuel Raynor Meaker, M. D.

Charles C. Thomas, Publisher, Springfield, Ill.: Amebiasis, by Ernest Carroll Faust, Ph. D.; Menorrhalgia: Menstrual Distress, by William Bickers, M. D.



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**English, A. R., et al.: Antibiotics Annual (1953-1954), New York, Medical Encyclopedia, Inc., 1953, p. 70.*

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9 No dangerous toxic effects from oral administration, no deaths attributable to Veriloid have been reported. Side actions of sialorrhea, substernal burning, bradycardia, nausea, and vomiting (due to over dosage) are readily overcome and thereafter avoided by dosage adjustment.

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13 Because of its rapidly induced, prolonged action (6 to 8 hours), tablets Veriloid provide around the clock hypotensive effect from 4 doses daily, make today's dosage effective today, and usually prevent hypertensive "spiking" during the night.

14 A notable safety factor in intravenous administration: *extent to which blood pressure is lowered is directly within the physician's control.*

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For immediate reduction of critically elevated blood pressure in hypertensive emergencies such as hypertensive states accompanying cerebral vascular disease, hypertensive crisis (encephalopathy), the toxemias of pregnancy. It lowers the blood pressure promptly, to any degree the physician desires, and with notable safety.[3] If excessive hypotensive and bradycardic effects should be invoked they are readily overcome by simple means. Supplied in boxes of six 5 cc. ampuls. The solution contains 0.4 mg. of Veriloid per cc.

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For maintenance of blood pressure in such critical instances, and for primary use in less critical situations which do not show the same immediate urgency. Provides 1.0 mg. of Veriloid per cc. in isotonic aqueous solution incorporating one per cent procaine hydrochloride. A single dose lowers the blood pressure significantly, reaching its maximum hypotensive effect in 60 to 90 minutes. By repeated injections (every 3 to 6 hours) blood pressure may be kept depressed for hours or days if necessary.[4] Supplied in boxes of six 2 cc. ampuls. Complete instructions as to dosage and administration accompany every ampul of the parenteral preparations of Veriloid and should be noted carefully.

1. Kauntze, R., and Trounce, J.: Treatment of Arterial Hypertension with Veriloid (Veratrum Viride), Lancet 2:1002 (Dec. 1) 1951.
2. Wilkins, R. W.: Combination of Drugs in the Treatment of Essential Hypertension, Mississippi Doctor *30*:359 (Apr.) 1953.
3. Stearns, N. S. and Ellis, L. B.: Acute Effects of Intravenous Administration of a Preparation of Veratrum Viride in Patients with Severe Forms of Hypertensive Disease, New England J. Med. *246*:397 (Mar. 13) 1952.
4. Moyer, J. H., and Johnson, I.: Intramuscular Veriloid (Aqueous Solution) As a Hypotensive Agent, Am. J. M. Sc. *226*:477 (Nov.) 1953.

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1. Werner, A.: Acta endocrinol. *13*:87, 1953.
2. Malleson, J.: Lancet *2*:158 (July 25) 1953.
3. Goldzieher, M. A., and Goldzieher, J. W.: Endocrine Treatment in General Practice, New York, Springer Publishing Company, Inc., 1953, p. 23.

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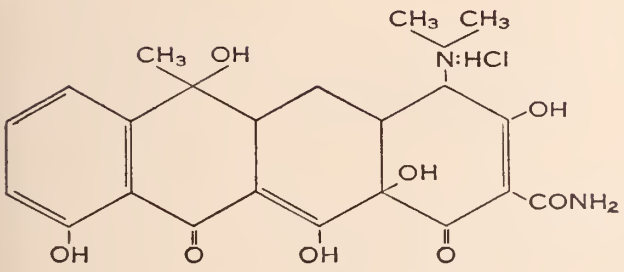
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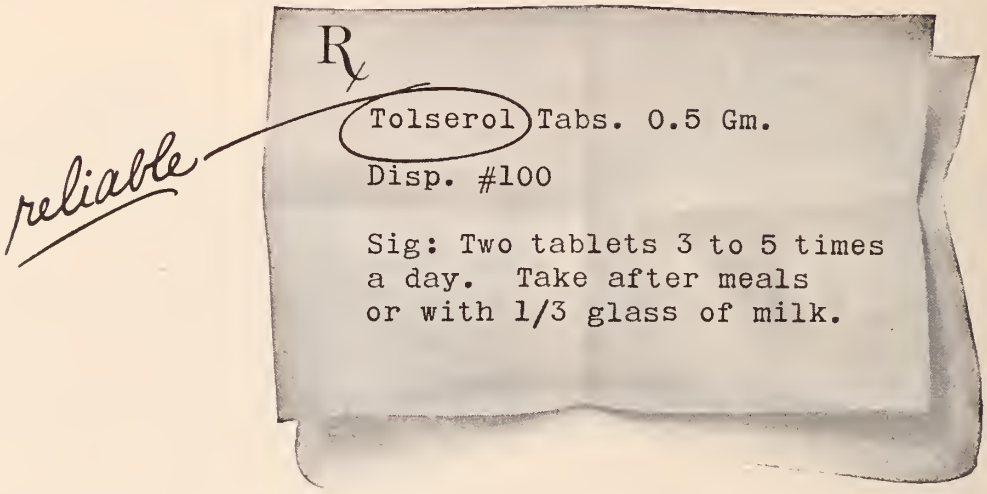


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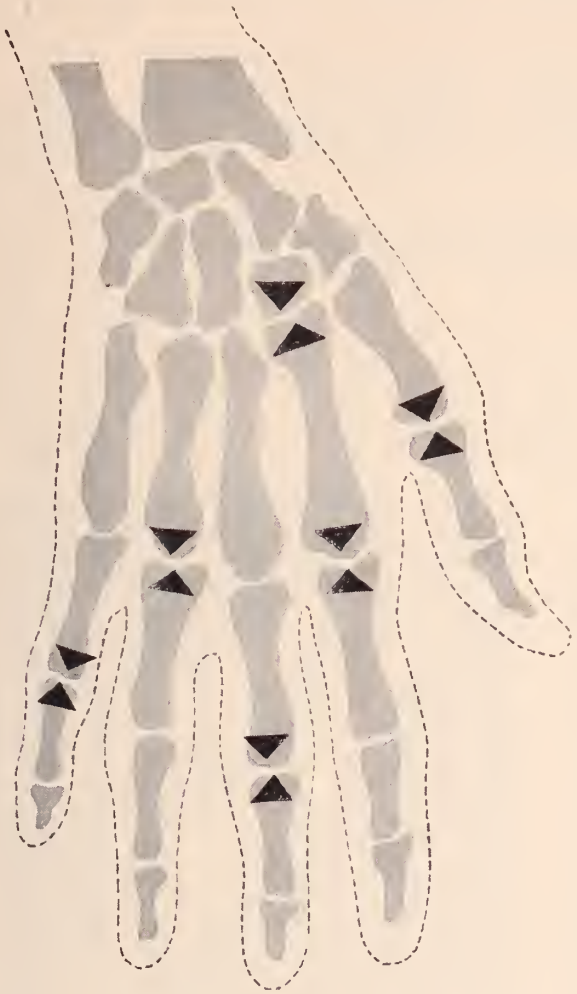
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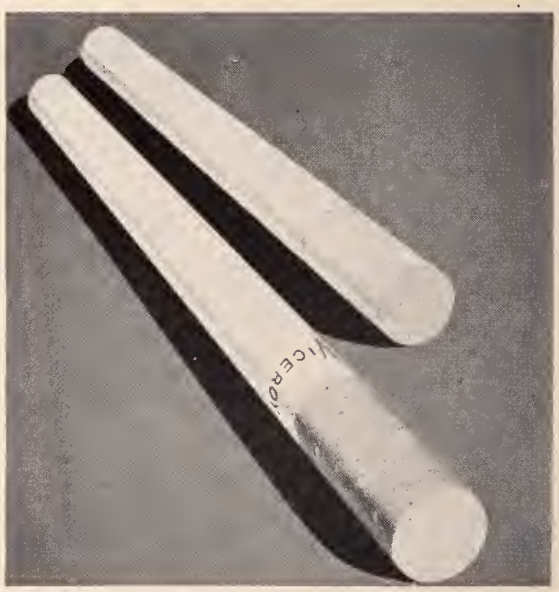


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Meats-in-a-Can

and Kitchen-Cooked Meats...
Comparative Nutritive Values

From a practical dietary standpoint, meats-in-a-can—preserved by commercial canning—are nutritionally interchangeable with meats of like variety prepared in the home.[1] For taste appeal, for economy and "keeping" quality, and for household convenience, meats-in-a-can are advantageous in many respects.

As the comparative data here shown indicate, kitchen-prepared meats and similar meats-in-a-can are closely alike in the amounts of various nutrients they provide.

COMPARATIVE COMPOSITION OF KITCHEN-COOKED AND COMMERCIAL-CANNED MEATS
(Nutrient Amounts per 100 Grams)

	*Kitchen-Cooked Ham[2]	**Canned Ham[3] (Chopped, Cured)	Kitchen-Cooked Beef Round[2]	Canned Roast Beef[2]
Water	50%	50%	59%	60%
Protein	21 Gm.	20 Gm.	27 Gm.	25 Gm.
Fat (ether extract)	28 Gm.	20 Gm.	13 Gm.	13 Gm.
Niacin	4.0 mg.	4.3 mg.	5.5 mg.	4.2 mg.
Riboflavin	0.21 mg.	0.19 mg.	0.22 mg.	0.23 mg.
Thiamine	0.46 mg.	0.40 mg.	0.08 mg.	0.02 mg.

*Values after conversion from 42% to 50% water basis.
**Values after conversion from 58.69% to 50% water basis.

Experimental studies have shown that the processing which meats-in-a-can undergo leads to little if any greater vitamin losses than does home-cooking of similar cuts of meat. In general, meats-in-a-can retain of their original vitamin content approximately:

60 to 80 per cent of thiamine
90 to 100 per cent of riboflavin
90 to 100 per cent of niacin
80 per cent of biotin
70 to 80 per cent of pantothenic acid.[4,5]

During storage for customary periods, at usual warehouse temperatures, meats-in-a-can show little, if any, further vitamin loss except in thiamine. Even thiamine, a highly thermolabile vitamin, was 52 per cent retained in pork-in-a-can after ten months' storage at 80° F. Retention of the vitamin was notably greater when the canned pork was stored at 38° F.

Since meats-in-a-can are thoroughly cooked in processing, they may be consumed as purchased, merely warmed or mildly cooked. When the meat is moderately cooked in preparation for consumption, little or no further loss in vitamins need to occur.

Recent studies show that meats-in-a-can are excellent sources of needed amino acids.[6] The 18 amino acids determined in these studies appeared in similar ratio and amounts in canned beef, pork, and lamb as in the respective fresh or home-cooked meats.

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The Seal of Acceptance denotes that the nutritional statements made in this advertisement are acceptable to the Council on Foods and Nutrition of the American Medical Association.

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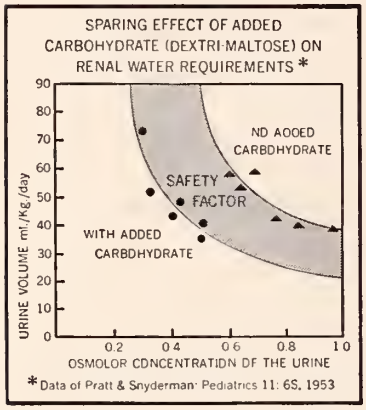
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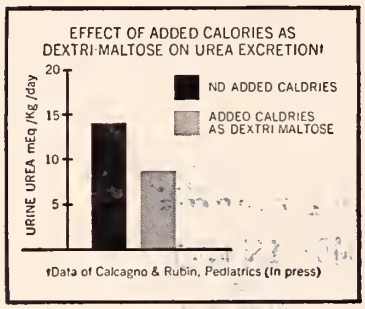
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1. Thorn, G. W., *et al.*, *New England J. Med.* **248**:632, April 9, 1953.

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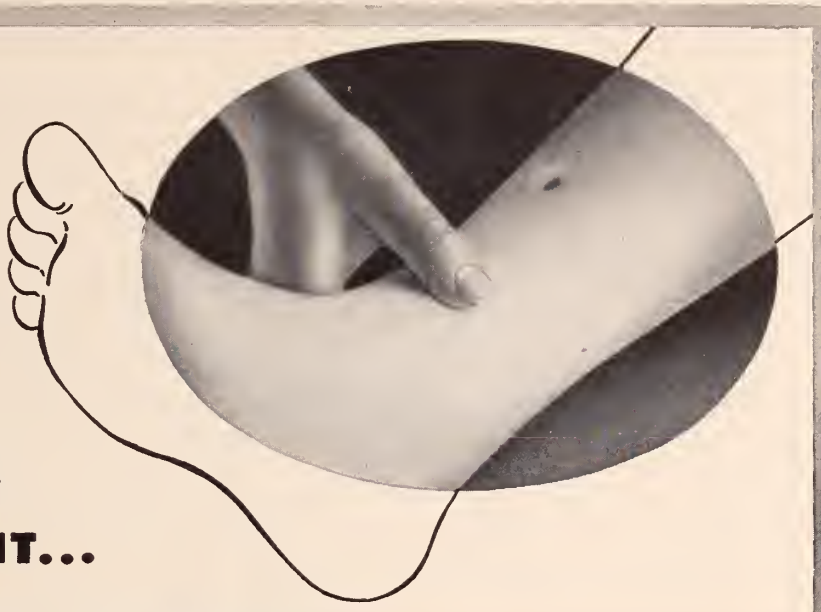
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1. Abramson, Julius, Bresnick, Elliott, and Sapienza, P. L.: *New England Jour. Med.*, 243:44, July 13, 1950.

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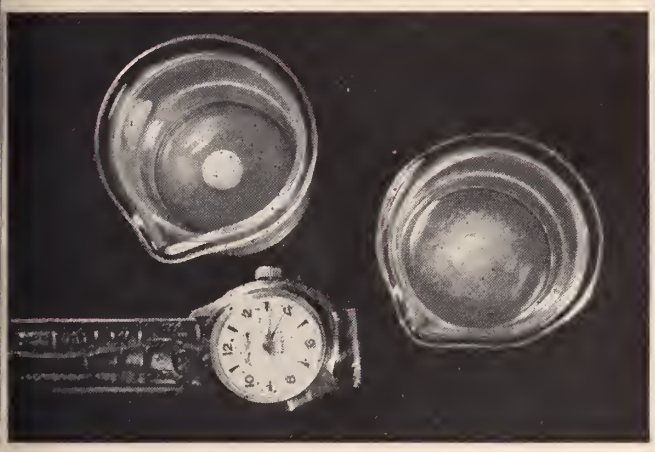
3:15—Disintegration Test begins in actual stomach fluids (pH 2.7). Beaker at left contains ordinary enteric-coated erythromycin. At right is new *Film Sealed* ERYTHROCIN Stearate (Erythromycin Stearate, Abbott).

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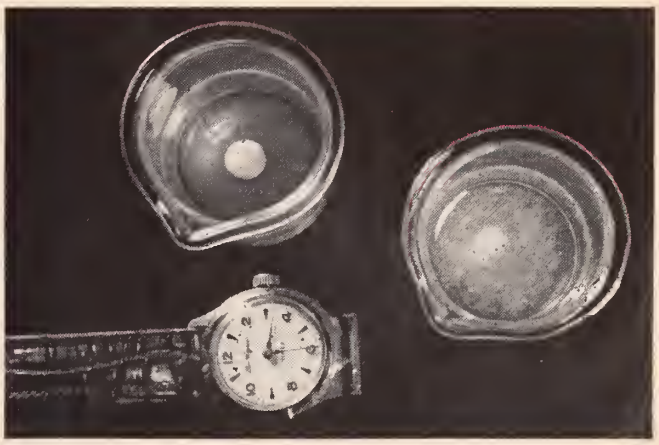
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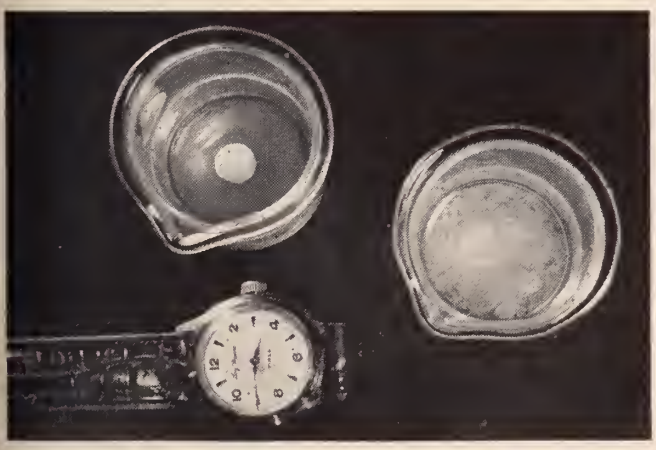
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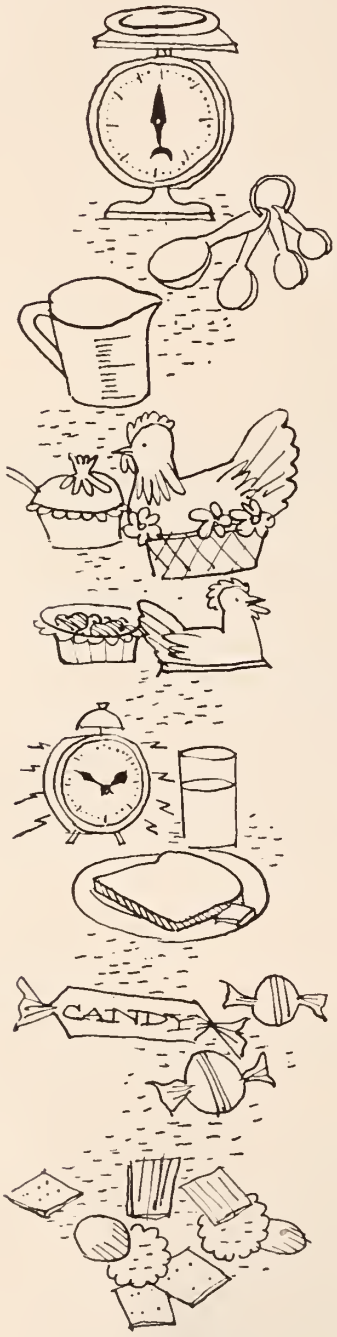


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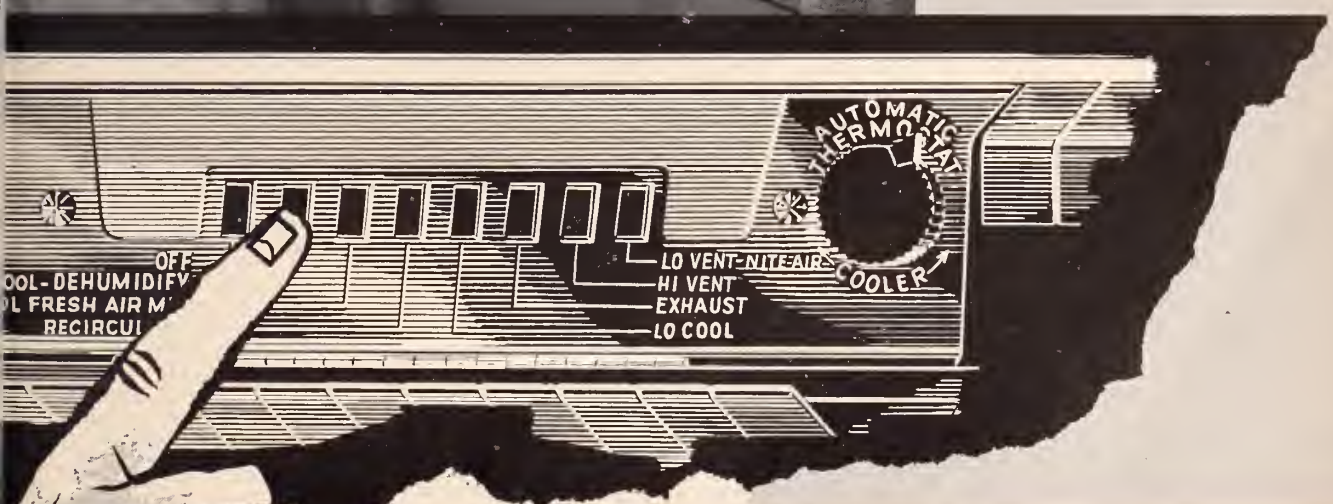
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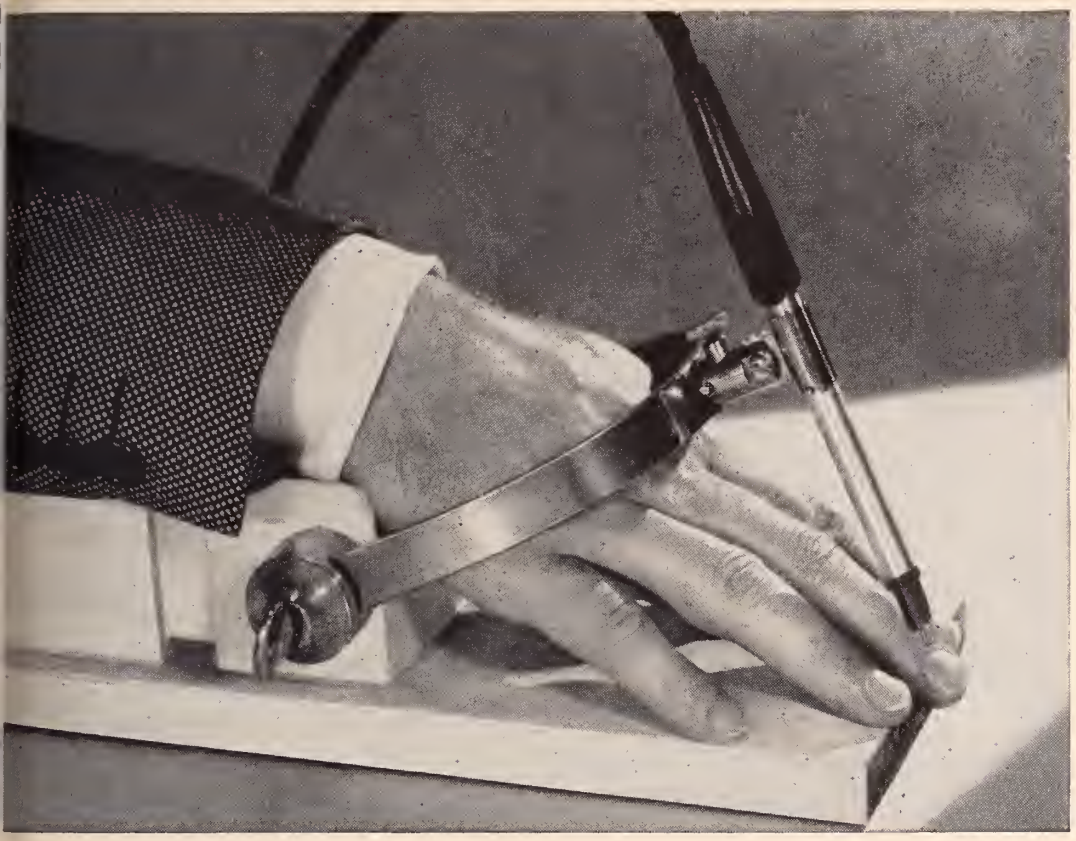
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DUODENAL ULCER COMPLICATIONS; CONTROVERSIAL PROBLEMS IN SURGICAL MANAGEMENT *

CLAUDE C. CRAIGHEAD, M.D. †
NEW ORLEANS

Many controversial problems exist in surgical management of complicated duodenal ulcer. The ulcer material in Charity Hospital of Louisiana at New Orleans, from 1951 until the present, has been used as reference and results of that study will be presented as various surgical aspects of duodenal ulcer are discussed.

Indications for surgery are hemorrhage, perforation, and obstruction. One form of perforation is posterior penetration onto the pancreas, manifested by continuous pain which radiates through to the back and is not relieved by food and antacids. Penetration should be treated definitively exactly as any other perforation, and yet, it is likely to be handled conservatively (See Figure 1).

DUODENAL ULCER
1951-'53 CHARITY HOSPITAL

PATIENTS 623	DEATHS 40	MORTALITY 6.4% / SURGERY
Uncomplicated Ulcer	170	35
Penetrated	33	13
Obstruction	93	65
Hemorrhage	229	93
Perforation	98 (7)	90

Figure 1. Column 1 denotes the number of patients. Column 2, the number having some type of gastric surgery.

Not generally listed as an indication in duodenal ulcer is occasional confusion with malignancy which demands exploration. A large penetrating ulcer near the ampulla of Vater may simulate duodenal or pancreatic malignancy and a fixed posterior ulcer near a mobile pylorus cannot be distinguished at times from a pyloric channel ulcer having cancer possibilities. Seldom should refractoriness to routine therapy sway the surgeon to action in a patient whose chief dissatisfaction is with minor alterations in day to day existence imposed on him by restrictions of conventional ulcer treatment.

These indications are also influenced by age. A more aggressive attitude has been adopted in patients under 20 and over 60 having complicated duodenal ulcer. Complications in the young portend many future difficulties, so much so that surgery has to be considered early in the course of the disease. No surgeon looks with favor on removing the stomach of a person at this time in life. However, to avoid enthreatening and invaliding developments of ulcer in the young and to restore the person to a state of health which allows full range of activity oftentimes calls for operative intervention. A person over 60 runs less risk from surgery than he does from an episode of severe hemorrhage, obstruction, or perforation

* Presented at meeting of the Orleans Parish Medical Society, December 14, 1953.

† From the Browne-McHardy Clinic, Louisiana State University School of Medicine, and Charity Hospital of Louisiana at New Orleans.

and if he gets a complication, he is a surgical candidate.

Apparent to all of us is the gradual reduction of mortality from massive gastroduodenal hemorrhage as a result of improved medical management, largely due to giving blood to replace that which is lost, and sparing use of transfusion still advocated occasionally is to be decried. Even with an aggressive medical program (See Figure 2) deaths occur from ulcer

HEMORRHAGE FROM DUODENAL ULCER

	Number of Patients	DEATHS	MORTALITY RATE
TOTAL.....	229	21	9.2%
CONSERVATIVE..	136	12	8.8%
SURGICAL.....	93	9	9.7%
Emergency Gastrectomy	20	4	20.0%
Elective Gastrectomy	73	5	6.85%

Figure 2

hemorrhage. The knotty problem is to pick out a small group in which the risk of conservative treatment is exorbitantly high. Certain factors may be guides, the patient over 45, in shock, losing bright red blood, bleeding persistently or repeatedly or having severe pain.

Ulcer hemorrhage remains without a clear cut indication for decisive surgical action. In massive hemorrhage the decision must rest on the evaluation of response to therapy, an index to continued hemorrhage. In the older age group, six to twenty-four hours may be sufficiently long to treat conservatively, and the more difficulty in maintaining the patient out of shock the sooner surgery should be done; younger people may be temporized with longer but they bleed to death, too. Recurrent hemorrhage, whether hours or days after the initial episode, is an absolute indication for immediate operation. Intervention may be necessary in a patient who bleeds slowly over a period of several days. The most urgent indication for emergency operation is continued severe bleeding.

If laparotomy is chosen, and on exploration, the bowel is filled with blood and no obvious source of bleeding is found below the first part of the duodenum, gastrectomy appears advisable, even when no ulcer is felt. In effect, subtotal gastrectomy seems to me the practical way to explore the lower end of the esophagus, stomach, first and second portions of the duodenum, unless a very wide opening is made in the stomach throughout its extent and across the pylorus into the duodenum. Cutting across the pylorus leads to serious interference with the motor mechanism of the stomach and oftentimes sequelae are more disagreeable than after gastrectomy. It must also be remembered that the operation is a heroic undertaking and that resection carries with it 80 per cent probability of getting the lesion.

During the course of performing gastrectomy the duodenal stump can be opened and the second portion of the duodenum visualized. In exploring a patient recently for bleeding, I found a healed ulcer in the first part of the duodenum after dividing it; on closer inspection I found the bleeder in the base of an ulcer in the second part of the duodenum. The lesion could not be felt from the outside, and would have been overlooked if the duodenum had not been opened widely.

The same thing can be done at the upper end of the stomach after it is cut across. The remaining gastric mucosa can be carefully examined.

The fallacy of doing less than subtotal gastrectomy for duodenal ulcer in the face of recent hemorrhage is illustrated by one patient in the Charity Hospital series who came in with recurrent small hemorrhages A simple gastroenterostomy was done which was followed by hemorrhage and death. The ulcer should be removed, if possible, the vessel controlled, and resection done.

The commonly accepted treatment of perforated duodenal ulcer is surgical closure of the opening and the very excellent results in 83 patients treated with simple

closure at Charity Hospital bear this out (Figure 3). Within recent years two ex-

PERFORATED ULCER

	Number of PATIENTS	DEATHS	MORTALITY RATE
TOTAL	105	12	11.4%
SURGERY	90	2	2.2%
Simple Closure	83	2	2.4%
Gastric Resection	7	0	0

Figure 3. These resections were carried out at the time of perforation.

tremes in management have been advocated.

Nonoperative methods of treating perforation embrace the principles of intravenous alimentation, continuous gastric suction, and antibiotics. Originally advocated by Wangensteen for the doubtful case, the poor risk patient, the localized perforation, and the late case with generalized peritonitis which has sealed off, it was revived in 1945 by Bedford-Turner to include all perforations.

The rationale of the method is that the ulcer has sealed off before surgery and manipulation breaks down the natural barriers. An added factor is that surgery may be undertaken for conditions such as coronary heart disease which mimic perforated ulcer. From the economic standpoint the man who has not been operated on will return to his work sooner than he who has. Against these arguments are that most frequently the ulcer is not sealed off, and contrarily, an erroneous diagnosis of perforated ulcer is more likely made in situations demanding immediate surgery, such as appendicitis.

Although a long time has elapsed since Von Haberer, in 1919, first recommended gastrectomy for the treatment of perforated ulcer, its more widespread use has only recently been accepted. Turner [9] recently reported that in 147 patients with duodenal perforations followed twenty years, 85 per cent had symptoms and one third required surgery. His conclusion from the study was that perforation signifies intractability and that subtotal gastric resection should be carried out, either at the time of perforation or within a short convalescent period. If resection is done, it should be used only in a patient seen soon after perforation whose general condition is good. If these limitations are observed the method should have as low a mortality rate as simple closure of the perforation, with better final results.

Most gastric surgeons commonly employ subtotal resection (See Figure 4). The

SURGICAL PROCEDURES

TYPE of GASTRIC RESECTION	NUMBER	DEATHS	MORTALITY RATE
BILROTH II (Gd)	187	10	5.4%
BILROTH I (GD) (VAGOTOMY IN 4)	8	1	12.5%
GASTROENTEROSTOMY (VAGOTOMY IN 3)	12	3	25.0%
EXPLORATORY CELIOTOMY	1	0	0
VAGOTOMY	1	0	0
CLOSURE PERFORATION	83	2	2.4%
TOTAL	292	16	5.5%

Figure 4

mortality rate is low, the postoperative morbidity minimal, and the hospital stay is less than two weeks.

Seventy to 85 per cent of the stomach must be removed, including all of the pyloric mucosa, to safeguard against recurrent ulceration. The great hazard in gastric resection is in obtaining secure duodenal stump closure. If ulcer formation is a secondary effect of excessive acid secretion and gastrectomy effects acid reduction, the ulcer does not have to be removed. The pyloric mucosa must be excised and if closure presents a problem, the Bancroft procedure [1] is a useful one (See Figure 5). Preferably, the ulcer should be gotten out.

Another safety maneuver in difficult closure is insertion of a catheter in the stump. The catheter is taken out in ten to fourteen days and the fistula will close.

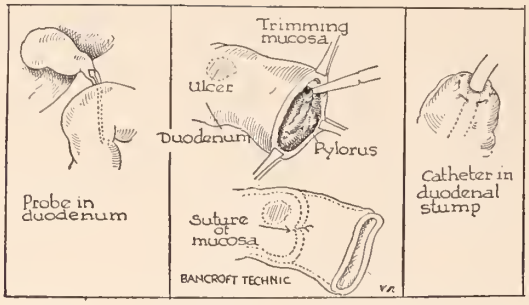


Figure 5. Safeguards in management of the duodenal stump.

A probe in the common duct, introduced from above or below, will help in protecting it from operative injury. No suitable method has been found to avert pancreatic damage and increasing incidence of surgical insult to the pancreas is being discovered. Many late digestive disturbances are based on pancreatic dysfunctions which have their beginning at the operating table.

Numerous technical variations in gastrojejunal anastomosis with gastrectomy designed to decrease the incidence of dumping syndrome include creation of a small stoma, a valve at the afferent side, antecolic anastomosis with afferent loop on the greater curvature, and additional peritoneal support of the gastric remnant.

Gastric resection with gastroduodenal anastomosis (Billroth I) is proposed by Harkins and others.[5] The objections to gastrojejunal anastomosis are the decreased pancreatic and biliary secretion resulting from impairment in the stimulating mechanism, imperfect mixing of food with these secretions because the gastric contents are shunted away, and increased motility of the bowel. Gastroduodenostomy cannot be done with a stenosed, inflamed, or fixed duodenum, a fixed stomach, or in lesions that require high resection along the greater curvature. Gastric retention is a frequent postoperative complication.

The only other competitor of gastric resection is vagotomy (See Figure 6). Alone, it has no place in the treatment of duodenal ulcer. Combined with gastroenterostomy it has a large number of advocates. It should not be performed as an emergency procedure for active hemorrhage. The Committee on Surgical Pro-

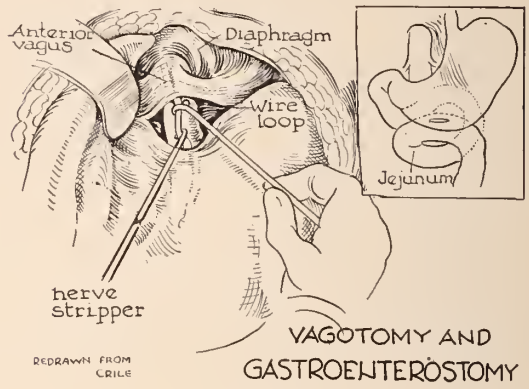


Figure 6

cedures of the American Gastroenterological Association[12] reported in November 1952, that a 70 or more per cent gastric resection (96.7 per cent good results) is a more satisfactory procedure for duodenal ulcer than gastroenterostomy and vagotomy (93.7 per cent good results).

To decrease the incidence of gastrojejunal ulceration which occurs in 3 to 8 per cent of patients undergoing vagotomy or resection, a combination of the two has been recommended. The hormonal and cephalic phases of gastric secretion are thereby abolished. Nothwithstanding the report of the Surgical Procedures Committee to the effect that vagotomy does not decrease the possibility of recurrence when a 70 per cent or more resection is done, Druckerman et al[2] have used the two together in 165 cases and no recurrent ulcers have been observed. Postoperative morbidity is increased slightly. The approach seems to have a great deal of merit and a larger experience may lead to its adoption by most surgeons.

The simple procedure of gastroenterostomy has its ups and downs, its past abuses, and its present limitations. Its usefulness in elderly patients with pyloric stenosis and low acidity cannot be denied. Care of the patient in the postoperative period may be more difficult than with gastrectomy because of the dilated stomach which poses more of a problem in

electrolyte control and prevention of regurgitation. One patient in the Charity Hospital series drowned in his own gastric juice after gastroenterostomy when the gastric suction was not working properly.

A combination of vagotomy and 50 per cent gastric resection, as advocated by Smithwick, probably has little more to offer than does vagotomy and gastroenterostomy. Wangensteen [10] has recently revived segmental resection of the stomach, and tubular resection, the latter method being a removal of all the greater curvature of the stomach from the esophagus to the duodenum, leaving the lesser curve as a small gastric tube in continuity. Moroney [6] (1951) published a series of successful cases in which he replaces the excised stomach with a detached portion of the transverse colon (Figure 7).

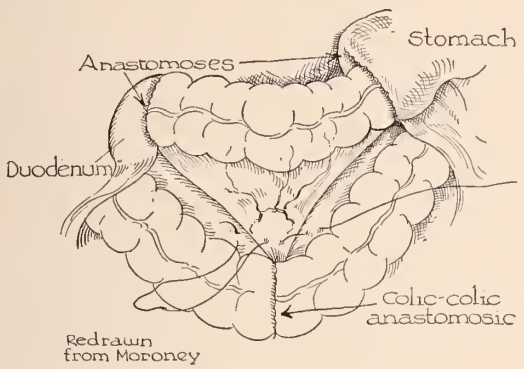


Figure 7. Stomach replaced by colon.

In spite of all the surgical procedures that have been proposed, recurrent ulceration will take place occasionally. Gray's hypothesis (See Figure 8) of a separate

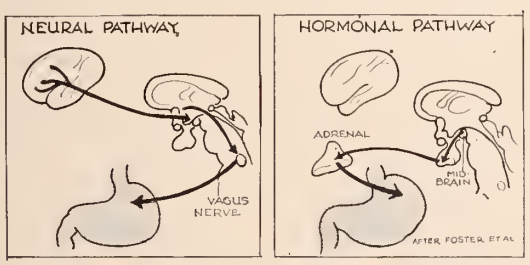


Figure 8. Hormonal mechanism as a possible etiologic factor in recurrent ulceration after gastrectomy or vagotomy [7]

hormonal factor acting directly on the gastric glands and mediated by the pituitary-adrenal axis gives insight as to why ulcer recurs. Dragstedt administered cortisone subcutaneously to dogs for periods up to a month which produced a sustained increase in gastric secretions. The stimulating action was noted in dogs with vagotomized and nonvagotomized stomach pouches and in animals with isolated stomach pouches in which the antrum had been removed.

Recent studies of electrolyte exchanges in the postgastrectomy dumping syndrome show that after ingestion of a meal, glucose is rapidly deposited in liver and muscle, potassium is shifted suddenly, and temporary extracellular potassium is shifted suddenly, and temporary extracellular potassium deficit exists. [4] At just what phase of the dumping syndrome potassium changes occur has not been definitely worked out and reports are in conflict as to the efficiency of potassium by mouth in treatment of the dumping syndrome. [8]

SUMMARY

Surgery in duodenal ulcer is reserved for its complications, hemorrhage, perforation and obstruction. Penetration is perforation and when a patient with ulcer develops continuous pain radiating through to the back, unrelieved by food and ulcer medication, he has perforated.

A person under 20 or over 60 having a complicated ulcer should have an early surgical appraisal.

Continued severe bleeding is an urgent indication for emergency operation. If no bleeding point is found, subtotal gastrectomy is favored.

Perforation of an ulcer signifies intractability and resection should be carried out.

A 70 or more per cent gastric resection accompanied by gastrojejunostomy is a more satisfactory procedure for duodenal ulcer than is gastroenterostomy and vagotomy, or resection with gastroduodenostomy, or any other procedures now being employed, with the possible exception of combined gastric resection and vagotomy. Combination of the two procedures which

effectively abolishes cephalic and antral phases of secretion has considerable promise.

The two common aftermaths of gastrectomy are dumping and recurrent ulceration. Abnormal shift of potassium and other electrolytes has been noted in the dumping syndrome. Gray's hypothesis of an adrenal hormone acting directly on the remaining gastric glands to increase acid secretion may account, at least in part, for gastrojejunal ulcer after gastrectomy.

Charts on 623 patients with duodenal ulcer admitted to Charity Hospital during 1951-1953 have been available for study. Forty patients died (6.4 per cent mortality). The mortality rate in 83 patients treated with simple surgical closure of a perforated ulcer was 2.2 per cent. The over-all mortality rate in bleeding duodenal ulcer was 9.2 per cent. Twenty per cent of those operated during active hemorrhage died. Subtotal gastric resection with gastrojejunostomy, including those who had emergency surgery, carried with it a 5.4 per cent mortality.

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THE DISADVANTAGES OF URETEROSIGMOIDOSTOMY *

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While much has been written about diversion of the urine into the bowel for a variety of defects and diseases of the bladder, relatively little has been said about the late complications and end results of this procedure, and its effect upon longevity. Most papers have dealt with technique; anyone who has read the monumental review of Hinman and Weyrauch (1937) knows that innumerable variations have been advocated; many more have been reported since their paper.

There is no doubt that ureterosigmoidostomy can be compatible with long survival. Thus Stevenson, in 1941, discovered a patient living forty-three years after ureteral transplantation for exstrophy of the bladder. He collected reports of 11 others surviving twenty to thirty years. Lower found that 6 of his patients had lived or were living more than twenty years after operation. Jacobs, discussing his personal experience with 138 ureterosigmoidostomies, mentions 6 who lived ten years or more. Hinman, Jr. has collected reports of the birth of 33 babies to 26 women with ureterosigmoidostomy, and has added 2 of his own.

Furthermore, the widespread application of transfusion and the effective use of antibiotics have greatly reduced surgical mortality. However, G. G. Smith has well said "but until the late results of ureteroenterostomy show a much lower

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incidence of renal failure, one hesitates to employ the method for a condition which is not in itself dangerous to life." Hinman remarked that it was only an occasional brilliant result that encouraged him to persist in his efforts to perfect the operation.

The reasons for these views are plain. The principle of the operation (the connection of the normally sterile upper urinary tract to the normally infected colon) is unphysiological, and will remain so until someone discovers a universal, nontoxic antibiotic to which bacterial resistance never develops.

The problem is not one of infection alone, since several other factors initiate and aggravate its effects. First, the ureters must be mobilized for some distance to permit their anastomosis to the bowel, thus damaging their extrinsic blood supply. While intrinsic vessels ordinarily prevent necrosis, the impaired vascularity may cause temporary edema and start the almost inevitable dilatation of the upper tract. The same process may reduce ureteral resistance to infection, and result in late stricture at the cut end of the ureter. This danger is presumably lessened but not entirely eliminated by slitting one side of the end of the ureter and anastomosing it directly to the bowel (Nesbit) so that there is no free, partly devascularized end protruding into the colon.

A second danger inherent in all methods, except Nesbit's and possibly Cordonnier's, is that of compression, at first by inflammatory edema and later by scarring, of the ureter by the wall of the colon. This hazard is doubtless reduced by preoperative preparation of the bowel with oral antibiotics, and by their parenteral use during convalescence. Baker has presented some experimental evidence suggesting that the postoperative administration of cortisone will minimize fibrosis in the incision in the colon, but this needs both experimental and clinical confirmation.

A third danger is that of reflux of feces into the ureter. This is fostered by the anastomoses of Nesbit and of Cordonnier, since both depend upon ureteral peristalsis to prevent regurgitation. Whisenand and Moore have reported a case in which Nesbit's operation in a patient with bilateral nephrostomies was followed by the escape of gas and feces from the renal catheters until they were removed, after which recovery occurred! Several observers (Parks, Mathis, Turner and Saint) have seen gas in the kidneys and ureters in roentgenograms made after such operations. Woodruff, Cooper and Leadbetter, Riba, and Weyrauch and Young have all shown by animal experiments that the submuscular tunnel of Coffey greatly lessens the danger of reflux. The prevention of regurgitation was Maydl's object in anastomosing the whole vesical trigone to the sigmoid, but Baker and Miller have shown, in the dog at least, that the intracolonic pressure finally overcomes even the normal ureterovesical valve when the defunctionalized colon is anastomosed to the bladder.

Mathisen has recently presented an interesting variant of ureterosigmoidostomy intended to prevent the entrance of feces into the ureters. He wraps the ureter in a quadrangular pedunculated flap of intestinal wall which is made to protrude into the lumen of the sigmoid. The objectives are to support the protruding ureter, and to permit its compression both by colonic peristalsis and by intestinal pressure. He was "unable to demonstrate reflux" in 18 clinical cases after this operation, but his longest follow-up was one year. Several dogs in which we did this operation developed strictures at the ends of the ureters in a very short time.

The route of infection of the kidneys after ureterosigmoidostomy is obvious. In addition to the lumen of the ureter, organisms can follow the periureteral lymphatics, since Hinman, Sr. found that the dog's kidney became infected when the unopened ureter was buried in a trough in the wall of the colon.

Statistics show the frequency and seriousness of obstruction and infection aft-

er ureterointestinal anastomosis. Harvard and Thompson blamed pyelonephritis for 50 percent of the surgical and 67.5 percent of the late deaths in their series of 98 cases followed for five to thirty-five years after ureterosigmoidostomy for exstrophy. Smith investigated 54 survivors of ureterosigmoidostomy. Nine died of "renal failure" within two years; 4 more required cutaneous ureterostomy for infected hydronephrosis, and 3 others had poor renal function at the time of investigation. Thus 16 of 54 patients (29.6 percent) had severe renal damage within a few years. Twenty-one of Cordonnier and Lage's 54 patients (38.9 percent) showed evidence of pyelonephritis within thirty months of operation. Lapides had never seen at autopsy a kidney which had been connected to the bowel and remained free of infection either in dog or in man.

In 258 patients subjected to urography six months or more after operation (53 from the University Hospital and 205 from the literature) only 31 percent had normal appearing kidneys. Since most of the urograms were made within a year of operation, the long term outlook is gloomy indeed.

The dangers of hydronephrosis and pyelonephritis after ureterocolic anastomosis are not limited to uremia and sepsis, but involve the complication of hyperchloremic acidosis. While Jewett and later Ferris and Odel have amply demonstrated that this results from absorption of urinary constituents from the colon, Lapides has proved, by ingenious clinical experiments, that renal injury aggravates the condition because it impairs excretion of absorbed chlorides and other acid radicles. This was foreshadowed by Ferris and Odel's observation that unilateral nephrostomy could relieve hyperchloremic acidosis even though the other kidney continued to secrete its urine into the colon. Our own studies have shown that hyperchloremic acidosis occurs three times as often and causes symptoms ten times as frequently when the kidneys are damaged as when they appear normal, and that it cannot be prevented or relieved by shortening the loop of bowel receiving the urine.

All this does not mean that ureterosigmoidostomy should be abandoned, but rather that it should be used only when there is no acceptable alternative, and that efforts to protect the kidneys afterward should be continued. What measures do we have at our disposal now, pending the development of a universal, nontoxic, totipotent, never-failing antibiotic to which bacterial resistance cannot develop?

POSSIBLE SOLUTIONS TO THE PROBLEM

If diversion of the urine is required in the presence of bilateral hydronephrosis or of nitrogen retention, cutaneous ureterostomy with all its disadvantages, is preferable to ureterosigmoidostomy because of the danger of hyperchloremic acidosis with the latter. In good risks one may consider Bricker's anastomosis of the ureters to a short, isolated loop of ileum with an external stoma to which a Rutzen or similar bag can be fitted.

When the ureters are to be anastomosed to the colon, the latter should be prepared with care. Initial catharsis is followed by the "preoperative colon diet" of Bargen. Neomycin and polymyxin B (aerosporin) are given orally for three days before operation, and colon flushes are used on the last evening. Since feces cultured at operation after this regimen may be sterile, its use should promote smooth healing of the anastomosis.

Poth has recently reported sterile fecal cultures four days after a twenty-four hour regimen consisting of catharsis followed by oral neomycin and sulfathalidine; this sounds like a superior method.

Certainly, the anastomosis should be of the terminolateral type favored by Nesbit in order to increase the circumference of the stoma, to leave no bare, devascularized ureter protruding into the bowel, and thus to discourage stricture formation. This should be supplemented by the construction of a periureteral tunnel composed of intestinal muscle and mucosa in order to minimize reflux.

Healing should be favored by the use of potent antibiotics parenterally during convalescence, and Baker's suggestion that cortisone be used should be investigated more extensively in the dog, although the literature concerning the effect of cortisone upon the healing of wounds casts doubt on the validity of Baker's assumption.

Terminal colostomy with closure of the proximal end of the distal loop should be given a thorough trial because, with modern antibiotics, the colon which receives the urine can certainly be made and kept clean enough to offer considerable protection to the kidneys which certainly need every possible help. While this measure was suggested by Krönig in 1907 and even earlier by Mauclaire, it has never had a fair trial for obvious reasons. Vest has recently reported securing sterile urine from the bowel nine months after a vesicosigmoidostomy of his own devising for exstrophy, a fact which should certainly encourage studies in this direction.

SUMMARY AND CONCLUSIONS

1. Ureteroenterostomy subjects the kidneys to great risk of serious damage from obstruction (stricture and reflux) and infection (reflux and ascent of periureteral lymphatics).

2. When serious renal damage follows this operation, hyperchloremic acidosis becomes a problem.

3. Cutaneous ureterostomy is preferred when renal damage antedates operation.

4. Ureteral anastomosis to the bowel should be used only when the underlying disorder threatens life or makes it intolerable, and no satisfactory alterntive is available.

5. Means at hand to minimize postoperative renal damage, at least theoretically, include: Careful preparation of the bowel; the use of an operation designed to prevent stenosis of the anastomosis as well as reflux; the administration of antibiotics and possibly of cortisone during healing; and the complete diversion of the fecal stream above the anastomosis.

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EXPERIMENTAL VISCERAL DISTURBANCES OF CEREBRAL ORIGIN IN RELATION TO MECHANISMS OF CONVULSIVE THERAPY

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We are still remote from a satisfying explanation of the therapeutic mechanisms of the convulsive procedures. Biophysical and biochemical changes in the brain accompany and follow the reaction and a part, at any rate, of the response is an increased excitability of the cerebral neurone. If we examine, post mortem, the brains of patients who have undergone electric or other forms of shock, we may discern evidence of destructive changes in the nerve cells. Are these changes due to the treatment and, if so, is neuronal destruction an essential element in the therapeutic effect? Does the treatment in some way establish more favorable metabolic patterns in the brain? To what extent may enzymatic and hormonal factors be altered? These are questions that press for answers.

We may expect at least partial answers to these questions. There is, however, a profound sense in which we must confess that the precise relationship between mental and emotional experiences on the one hand and neurophysiological action and neuropathological processes on the other continues to elude us. The mechanisms of the brain and the mechanisms of the mind are not yet conformable to a single pattern, although research on the prefrontal areas, for example, during the past twenty years has done much to bridge, for some, the gap between psychological and neurological functions. For others, like Sherrington [6, 7] the mind remains forever something apart, invisible, intangible, supreme, naked, and untouched. To Sherrington, the liaison between the psychical and the physical was an unsolved mystery.

"What right," he asked, "have we to conjoin mental experience with physiological" . . . To many of us a mere juxtaposition of the two sets of happenings proclaims their disparity. On the one side changing electrical potentials with thermal and chemical action making a physiological entity held together by energy relations; on the other, a suite of mental experience, an activity no doubt, but in what if any relation to energy? As for me, what little I know of the how of the one, does not, speaking personally, even begin to help me toward the how of the other. The two, for all I can do, seem to remain disparate and disconnected". [6] Sherrington has presented, with sensitive insight, the essential elements of the mystery. Although our ignorance may sometimes bid us despair, we may be confident that man's curiosity will lead him to seek and formulate new and more comprehensive syntheses in which he will envisage his psychological and physiological nature welded into a more perfect unity.

The object of my paper this morning is to share with you certain experimental evidence suggesting that the effects of therapeutic shock are not limited to action upon the brain alone but that the stimulus to the brain activates cortical autonomic centers by which widespread vasomotor (and other autonomic) changes are produced throughout the body. These changes must be taken into account in our thinking of the therapeutic mechanisms of shock procedures.

My own interest in the role of the cerebral cortex in the integration and coordination of autonomic as well as somatic functions was captured by reading, several years ago, the writings of Hughlings Jackson. This farsighted pioneer in neu-

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rological thought had, by 1869, concluded that the central nervous system, including its highest heirarchial levels, was concerned with total function—autonomic as well as somatic. Hughlings Jackson urged that the very highest processes (the substrata of consciousness) are only the most multifold and complex of sensorimotor processes and that they represent or re-represent *all* lower nervous centers and thus the organism *as a whole*. He explicitly affirmed that one must add to the constitution of the units of cerebrum nerve fibers to the heart, blood vessels, and viscera "or rather probably to the regions of the sympathetic system, from which these parts are supplied . . . The highest nervous processes are potentially the whole organism". [5]

Hughlings Jackson's holistic concept of brain function has a particularly modern appeal and there exists now an imposing and convincing body of experimental evidence for cortical representation of autonomic activity. Our own earlier contributions, reported in 1936, [2] constituted first an exploration of electrically excitable cortical areas in cats, monkeys, and the chimpanzee in search of those regions yielding vasomotor responses. We were able regularly to produce, in anesthetized, curarized animals, transient elevations of blood pressure, dilatation of the pupils, and retraction of the nictitating membranes by controlled, localized electrical stimulation of cortical loci in the frontal lobe. As shown in Fig. 1, the regions of lowest threshold for pressor responses in the cat include the anterior sigmoid gyrus, gyrus proreus, and the mesial portion of the orbital surface of the frontal lobe as far posteriorly as the lamina terminalis. Stimulation of the lateral aspects of the orbital surface, the cingulate gyrus, the lateral and posterior sigmoid gyri, and also the rostral portion of the pyriform lobe yields similar pressor responses but with higher threshold, lower intensity, and longer latency. As this figure also shows, there is a widespread area from which falls of arterial blood pressure

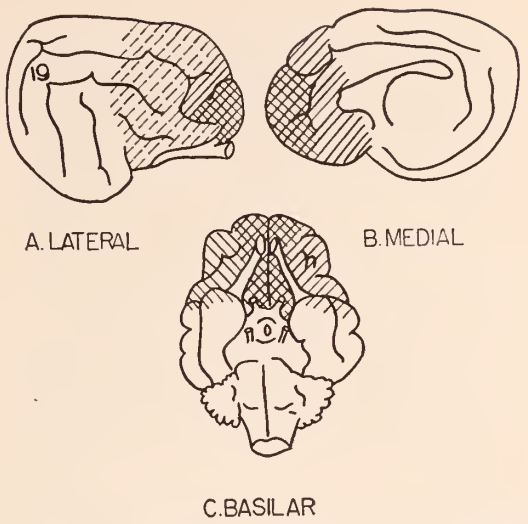


Fig. 1. A, lateral, B, medial and C, basilar surfaces of the cat's cerebral cortex showing areas yielding pressor and depressor responses to electrical stimulation. Crosshatched areas—rise of blood pressure, lowest threshold. Solid lines—rise of blood pressure, highest threshold. Broken lines —fall of blood pressure.

are obtained. This area includes the convexity of the hemisphere posterior to the sigmoid gyri and extending about halfway to the occipital pole or approximately as far back as the pseudosylvian fissure. Further posteriorly, no autonomic responses whatever can be elicited by localized electrical stimulation.

Figure 2 illustrates a rise of 60 mm. Hg in the mean arterial pressure with pupillary dilatation and retraction of the nictitating membranes from stimulation of a locus on left gyrus proreus of a cat. In Fig. 3 is seen a depression of 20 to 30 mm. Hg mean blood pressure following stimulation of a locus on left gyrus ectosylvius in the electrical depressor area of the cat. In all of the animals in these experiments, somatic muscular movements were totally abolished by d-tubocurarine. Ether anesthesia was used. Local anesthesia of the responsive cortical loci with dibucaine was found to eliminate the autonomic effects so the responses are the result of excitation of cortical elements and are not due to current spread to lower centers.

In the monkey, blood pressure changes are obtained from the motor and premo-

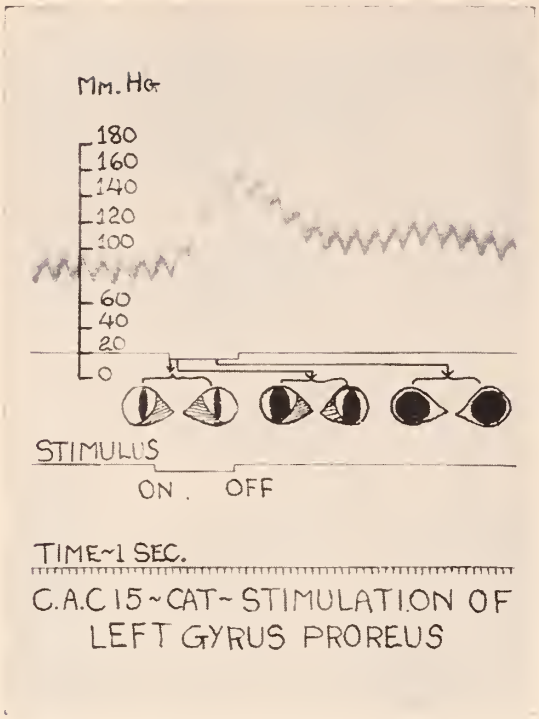


Fig. 2. Transient elevation of arterial blood pressure evoked by electrical stimulation of a locus on left gyrus proreus of a cat. Pupillary dilatation and retraction of the nictitating membranes are diagrammatically illustrated. (From Hoff, et al. [4])

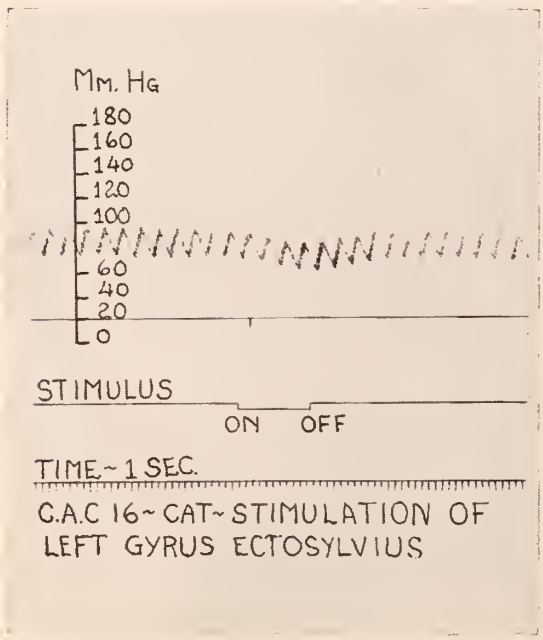


Fig. 3. Transient fall of arterial blood pressure evoked by electrical stimulation of a locus on left gyrus ectosylvius (in the electrical depressor area, Fig. 1A) of a cat.

tor areas (Brodmann's Areas 4 and 6) and from scattered loci rostrally on the convexity of the frontal lobe. Responsive areas on the oribtal and medial surfaces of the frontal lobe are likewise distinguished and the excitable region for vasomotor responses also includes the rostral tip of the temporal lobe. In the cat and the monkey, therefore, the cortical autonomic area overlaps the somatic sensorimotor region, and in 1939, we were able to report pressor responses from the motor cortex of human patients.[3] The cortical regional differentiation between pressor and depressor responses, seen in the cat, has not been demonstrated in the monkey, chimpanzee, or man.

In an analysis of the cortically-evoked pressor response, we found, in 1937,[1] that there is an associated widespread visceral vasoconstriction involving the kidneys, alimentary tract, and liver, and even in some cases, the heart and the brain itself. Figure 4 illustrates a typical effect of lo-



Fig. 4. Simultaneous dilatation of the forelimbs, reduction of renal volume, and elevation of arterial blood pressure from stimulation of the right lateral sigmoid gyrus of the cat's cortex. LL = left foreleg; † = increased volume; RL = right foreleg; ‡ = increased volume; RV = renal volume; BP = arterial blood pressure; Left Scale = mm. Hg; Right Scale = magnitude of volume change in cc. (From Green and Hoff [1])

calized electrical stimulation of a point on the lateral sigmoid gyrus of the cat. Here we observe a rise of arterial pressure with a synchronous reduction in kidney volume and a dilatation of both forelimbs.

These experiments, which have only been briefly touched upon here, offer evidence that there are neuronal elements within the cortex, excitation of which initiates a redistribution of blood, decreasing the supply to certain viscera (the kidneys, alimentary tract, liver, etc.) and increasing the supply to those parts (e. g the limbs) which would be made active by excitation of somatic efferent pathways from the same cortical areas. The

cortical autonomic mechanism thus serves with the cortical somatic mechanism to integrate a total response, with appropriate motor and vascular components.

The vasoconstriction in the kidney was not only inferred by reduction of renal volume but also determined by observation of blanching of the kidneys seen in white light or "black-out" of the kidneys under ultraviolet light with fluorescein in the circulation or by other methods such as India ink injections.[4] Figure 5 shows



Fig. 5. Cut surface of the left kidney of a control cat in which all of the surgical procedures were carried out without stimulation of the brain. The organ is well filled with blood.

the normal appearance of the cut surface of the left kidney of a control cat revealing that the organ is well filled with blood. In contrast, we see in Fig. 6 the kidneys of a cat subjected to electrical stimulation of a locus on the anterior sigmoid gyrus twenty times during an acute experiment lasting two hours. There is striking cortical and medullary ischemia with the juxtamedullary region still filled with blood.

During the past three years, we have imposed electric shock type stimulation upon the brain of the cat in acute and chronic experiments, using bilaterally applied percutaneous electrodes without anesthesia and with or without motor paralysis by d-tubocurarine.[4] For these experiments, the Offner Brief Stimulus Therapy Apparatus (BST) was employed with a resistance of 1,000 to 1,500 ohms



Fig. 6. Cut surfaces of the kidneys of a cat subjected to localized electrical stimulation of a point on the anterior sigmoid gyrus 20 times during an acute experiment lasting 2 hours. In contrast with the control kidney (Fig. 5) the cortex and medulla are ischemic. The juxtamedullary region is well filled with blood.

between the electrodes. The optimum pulse duration was 0.5 millisecond; the stimulus duration was 2 seconds; the peak current varied between 150 and 300 milliamperes and the average current between 10 and 18 milliamperes. With the electrodes in alignment with the cortical depressor region, falls of blood pressure were regularly evoked; when the electrodes spanned the cortical pressor area, rises of pressure were always produced.

Following multiple BST stimulations in acute experiments lasting two to three hours, there was fatty degeneration in the tubules of the kidneys. Figure 7 shows this fatty change in the renal cortex of a cat that received 19 BST stimulations in an experiment lasting three hours. Note in this hematoxylin and eosin stained section large fat globules in the convoluted tubules. In all the control kidneys little or no stained fat is revealed in Sudan IV sections.

Cats receiving 10 to 20 BST stimula-

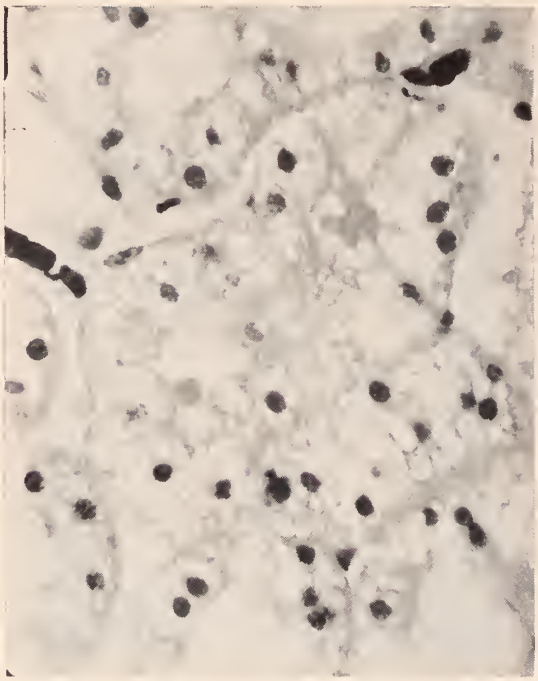


Fig. 7. Cortex of the left kidney of a cat subjected to 19 BST stimulations of the brain in an acute experiment. There is fatty degeneration of the tubule cells with pyknosis and fragmentation of the nuclei. Hematoxylin and eosin stain. (From Hoff, et al. [4])

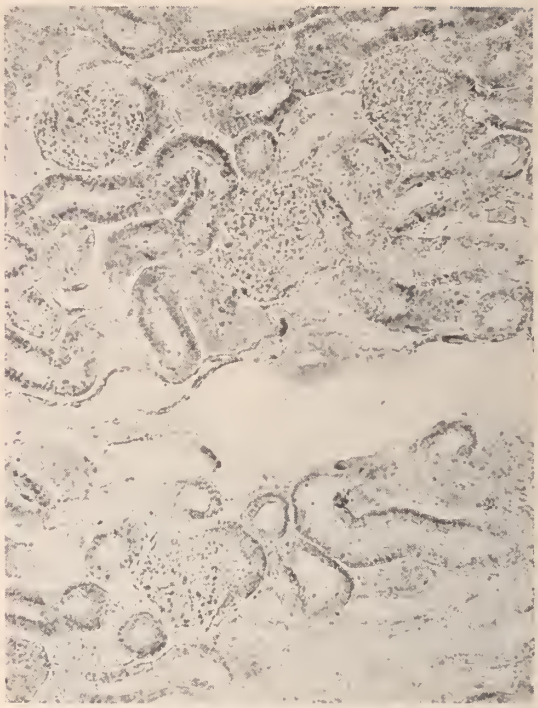


Fig. 8. Cortex of the left kidney of a cat subjected to 10 BST stimulations of the brain 7 days before sacrifice. There is severe degeneration of the tubules. The glomerular tufts are swollen and the glomerular spaces are filled with exudate and cellular debris. Sudan IV stain.

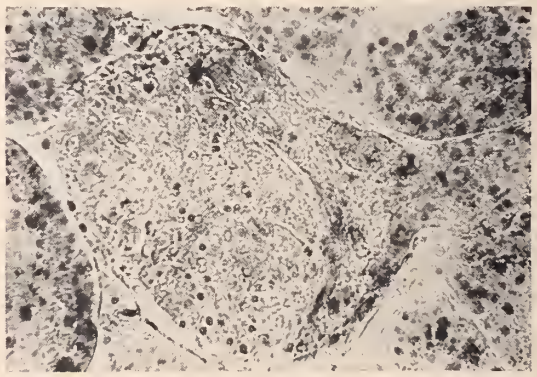


Fig. 9. A single glomerulus from the kidney illustrated in Fig. 8. (From a cat subjected to 10 BST stimulations of the brain 7 days before sacrifice.) Large fat globules are present in adjoining tubule cells; the glomerular swelling and filling of the capsular space are clearly seen. Sudan IV stain.

tions each week for one to six weeks exhibited swelling and severe fatty degeneration of the cells of the convoluted tubules with some nuclear changes and shrinkage of the cell-bodies. The glomerular tufts were swollen and the capsular spaces were filled with exudate and cellular debris. There was also an increase in the number of cells in the glomerular capsule and the juxtacapsular region of the convoluted tubule. There were fatty, hyaline, and granular casts in the tubules. We see in Fig. 8 severe fatty degeneration of renal tubules, swelling of the glomeruli, and filling of the capsular spaces in the kidney of a cat given 10 BST stimulations of the brain seven days before sacrifice. Figure 9 is an enlarged microphotograph of a single glomerulus in the same animal and shows in detail the glomerular swelling, and the filling of the capsular space. These changes were widespread throughout the renal cortex and involved nearly all of the glomeruli and tubules observed. In a given kidney the vessels of some glomerular tufts were partially obliterated, others completely. (See Fig. 10).

In short, we have in the BST stimulated animal a picture of nephrosis based in all probability upon repeated arteriolar spasm in the kidney. This leads to anoxia

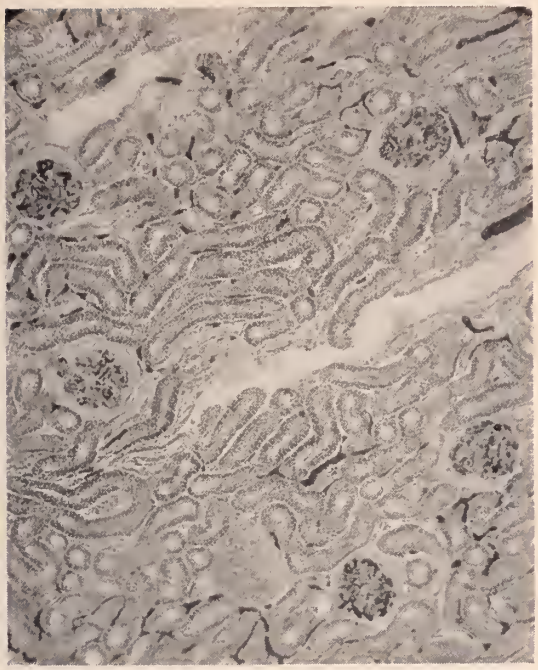


Fig. 10. Cortex of the left kidney of a cat subjected to 50 BST stimulations over a period of 30 days with sacrifice 9 days after the last stimulation. Intracarotid injection of India ink just before sacrifice. Hematoxylin and eosin stain. Glomerular spaces are filled with exudate and cells, and the vessels of the glomerular tufts are partially, and in one instance completely, uninjected with ink. Hoff, et al. [4])

of the glomeruli and tubules with degeneration, and with exudation due to permeability changes. No enduring hypertension has been seen and these changes are probably for the most part reversible. It may be that with a background of infection or other pre-existing complications, irreversible renal failure may result.

We have said that other viscera participate in the vasospasm produced by brain stimulation. Figure 11 shows at the right the stomach of a control cat in which the arterial system was injected just before sacrifice. Note that the organ is well filled with ink. Contrast this with the vasoconstriction and therefore failure to take up the ink in the stomach of a cat that had received 4 BST brain stimulations in an acute experiment. (Left-hand side, Fig. 11).

The vascoconstriction may involve even



Fig. 11. Right—mucosal surface of the stomach of a control cat in which the arterial system was injected with 50 cc. of 50 per cent India ink just before sacrifice. The organ has freely taken up the injection mass. Left—mucosal surface of the stomach of a cat subjected to 4 BST stimulations of the brain in an acute experiment. India ink injection as in the control. Note failure to take up the injection mass.

the brain itself. In Fig. 12 we see on the left (Experiment 68) a brain from a control cat that has freely taken up the arterial India ink injection mass. Note next (Experiment 64) the vasoconstriction in the brain of a cat in which a locus on the

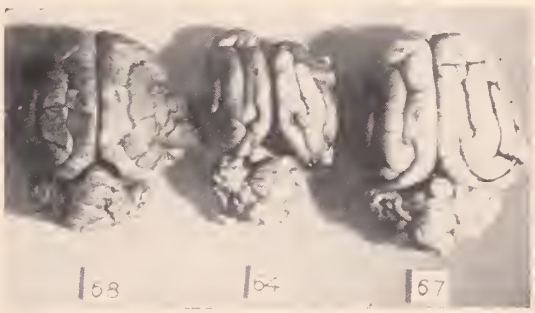


Fig. 12. Left ((Experiment 68)—Brain of a control cat; arterial injection of India ink as in Fig. 11. Middle (Experiment 64)—Brain of a cat that had received 7 electric stimulations of a locus on the left anterior sigmoid gyrus in an experiment lasting 3½ hours; arterial injection of India ink as above. Right (Experiment 67)—Control cat; no India ink injection. Contrast the vasoconstriction in Experiment 64 with the heavier injection in the control (Experiment 68).

left anterior sigmoid gyrus was stimulated seven times in an experiment lasting three and one-half hours. A noninjected control brain is seen at the right (Exper-

iment 67). The depth of the vasospasm in Experiment 64 may be judged in Fig. 13 which shows the same three brains in

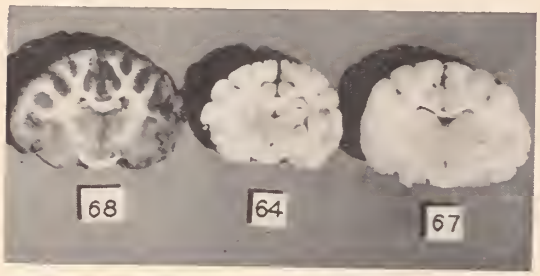


Fig. 13. Cross-sections of the three brains illustrated in Fig. 12. Arterial India ink injection as above. Contrast the vasoconstriction in the brain of the stimulated animal (Experiment 64) with the free injection of the brain in control (Experiment 68).

frontal section in the same order as in Fig. 12.

The lungs and spleen in all the brain stimulation experiments reported here consistently exhibited a plethora in contrast to the visceral vasoconstriction elsewhere. These organs were congested with blood and the lungs showed considerable hemorrhage. We have recently found in cats given repeated daily convulsive doses of metrazol over a period of seven weeks that there is a reactive medial hypertrophy of the pulmonary arteries. So although a cerebrogenic systemic high blood pressure has not been produced, it appears that in the course of these repeated experimental metrazol convulsions, pulmonary hypertension has supervened.

In conclusion, these experiments point to the existence of a physiological regulatory mechanism within the cerebral cortex whereby vasomotor changes appropriate to total body responses are effected. Typically, stimulation of the pressor area of the cerebral cortex initiates a redistribution of blood from certain viscera into active skeletal muscles at a raised level of arterial tension. Electrical stimulation of the cortex or the brain as a whole may lead to visceral vasospasm with resulting anoxic changes. Since these changes are widespread, probably involving the endocrine glands as well as the various organs discussed, it seems likely that the therapeutic effects of electric shock do not depend solely upon the action of electric current on the brain but involve also general metabolic alterations. Similar reasoning may be applied to other forms of convulsive therapy.

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TWO SIMPLE OFFICE TECHNIQUES IN PEDIATRIC PRACTICE

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1. A SIMPLE METHOD FOR IMMOBILIZATION OF CLAVICULAR FRACTURES IN INFANTS

During the newborn period, fractures of the clavicle are more frequent than all other fractures combined. These fractures nearly always occur in the lateral half of the clavicle. The site is usually at the junction of the lateral and middle third of the shaft. During passage of the infant through the birth canal, the clavicle is broken by excessive pressure of the anterior shoulder against the maternal symphysis pubis. In breech presentation, direct traction of the obstetrician's fingers in the attempt to express the shoulders is also responsible for clavicular injuries.

In addition to the above mentioned neonatal clavicular fractures, one frequently

encounters this condition in the latter part of the first year and early second year of life, in the so-called "toddlers." This injury usually occurs as a result of a fall on the outstretched hand, elbow, or shoulder, this being pushed violently against the chest.

The chief objectives in the treatment of the above conditions should be to make the infant as comfortable as possible with as little restriction of activity as is necessary, and yet obtain the maximum in a satisfactory functional and cosmetic result.

The following is a simple technique that I have used quite successfully for about two years in my office practice. Its chief advantage lies in economy and ease in availability of materials; also, in that the following dressing can be removed and reapplied by the parent in the home. This will permit bathing of this area of the infant.

Method: Only three materials are needed:

1. A large size diaper.
2. Two large safety pins.
3. Adhesive tape.

Step No. 1.—First a measuring tape is passed around the shoulders in the manner of a posterior figure-of-8, in order that the approximate length of the dressing to be used may be determined.

Step No. 2.—Next the diaper is opened to its full square area.

Step No. 3.—The diaper is now folded in a triangle.

Step No. 4.—By continuous folding in a 2 inch band, the diaper is folded to an elongated dressing.

Step No. 5.—The predetermined measurement of Step 1 is now applied to the dressing, and both ends are folded medially to accommodate this measurement.

Step No. 6.—The ends are taped by circular application of adhesive tape and also the center where the loose ends of the triangle are present.

Step No. 7.—Now the folded diaper band is applied as a clavical posterior figure-of-8 dressing and secured in place by the two safety pins.

No paddings are necessary, and the application of this dressing for about two weeks will suffice to permit adequate union. It is obvious that this method has its limitations in those cases with any marked degree of displacement.

2. SIMPLE TECHNIQUE FOR TREATMENT OF GRANULOMA OF THE UMBILICUS

In the vast majority of normal infants the umbilical cord will dry and divide by the sixth to the eighth day of life. Some slight degree of infection, usually saprophytic organisms, almost invariably occurs in the wound after the shedding of the cord. Normally thin skin and scar tissue form in the wound and healing is complete in two weeks. Some wounds remain open and do not heal for weeks. The most common cause for delayed healing is umbilical granuloma. This is a nubbin of exuberant "proud flesh" that extends upward from the base of the wound and prevents epithelialization. This tissue is identified as soft, vascular and granular, dull red or pink in color, and may have a seropurulent secretion.

Classically the treatment as described in most textbooks, has been by cauterization with silver nitrate sticks and the application of various powders and dressings. This usually takes weeks for healing, and occasional bleeding, purulent discharge, and even secondary cellulitis are sources of great concern to both parents and the attending physician.

The following is a simple technique that has been used with great success by me.

When the true character of the pathology has been ascertained to be a granuloma, the wound is cleaned with alcohol on a cotton applicator. An office assistant places superior and inferior traction with the fingers at the umbilical margins. This causes the base of the wound to flatten and protrude outward. Now a long length of No. 40 white cotton sterile ligature is placed around the granuloma and worked as close as possible to the base of the wound by means of a hemostat. This ligature is tied as tightly as possible, then ends are cut about 2½ inches long and allowed to lie out of the wound. Next the proud flesh

is cauterized in the classical manner with a silver nitrate stick, and alcohol is once again applied in wound with cotton tip swab. The traction is released and the granuloma falls back into the wound with the cotton-tie ends sticking out. No dressing is applied. The parent is instructed in the method of twice daily cleansing of the wound with a cotton tipped applicator. Eight grams of a liquid ointment * that contains 4000 units of polymyxin B sulfate and 200 units of bacitracin are prescribed with instructions to instill 3 to 4 drops twice daily in the umbilical wound.

Because the blood supply to the granuloma has been interrupted, in the majority of cases it will now separate and leave a clean base in about five to seven days. Only on one occasion has it been necessary to apply a second ligature; however, in rare cases it may be necessary to cauterize the proud flesh for the second time.

SUMMARY

Two simple office procedures have been described.

1. A diaper method for posterior figure-of-8 immobilization of clavicular fractures.

2. A cotton ligature method for dealing with granuloma of the umbilicus.

* Polycin liquid, (Pittman-Moore Co.)

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RETROLENTAL FIBROPLASIA;

AN OPHTHALMIC-PEDIATRIC-OBSTETRIC PROBLEM *

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Retrolental fibroplasia, a disease of the retina which destroys the vision of premature babies, was an unknown and unnamed clinical entity until 1942, when Terry [1] described the first case. Up to 1945, less than 175 cases had been recorded. Today this disease is the commonest cause of blindness in infants and young children.

Retrolental fibroplasia is no longer a matter of concern only to the ophthalmologist. It has, properly, become a matter of grave concern to pediatricians, obstetricians, and, most recently, epidemiologists. The pathologic process has been correctly described, but not very much else has been established, although the problem has occupied the attention of the best ophthalmic talent in the country for many years, aided, within the last few years, by other specialists, particularly pediatricians. Except that it is a disease of prematurity its etiology remains obscure. Furthermore, while we know how to diagnose it, we do not know how to prevent it or how to cure it.

The prognosis, unfortunately, is perfectly clear. Some cases regress spontaneously, but when once retrolental fibroplasia is fully developed, the end-result is total or almost total loss of vision. King's [2] report of 210 cases from the Massachusetts Eye and Ear Infirmary contains the longest follow-up studies on record, from two to seven years. Seventy-one of the children were totally blind at the end of the periods of observation. Seventy had light perception and could see hand movements. Forty-six could identify and reach for objects. The others, 10 per cent of the total number, had vision of 20/200 or better in at least one eye, though it was open to doubt, King stated, whether even this amount of sight could be retained.

Retrolental fibroplasia, however, is a disease which is so interesting and which, because of its enormously increased and increasing incidence, is of such importance, that it is our duty to take stock, at intervals, of the information available about it, even though what we know positively is discouragingly little.

Some of the titles in the literature make that fact clear. A recent editorial in the *Journal of the American Medical Association* [3] entitled it "an unsolved problem."

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This is, incidentally, the second editorial on the subject in this journal within a two and a half year period. Vail [4] called his article "The puzzle of retrolental fibroplasia." Speert and his associates [5] sum up most of what we know about the etiology in their subtitle, "A hazard of premature births." Locke and Reese [6] indicate the present status of our knowledge of the etiology in their subtitle, "The negative role of light, mydriatics and the ophthalmoscopic examination." They might have added the negative role of practically every other cause that has been investigated.

Zacharias' [7] excellent survey, published in 1952, contains 165 references to the periodical literature. I doubt that the listing is all-inclusive, but certainly this bibliography represents the most important articles on the subject which have appeared in the world literature from Terry's [1] original description in 1942 through the first months of 1952. The distribution of the papers (Fig. 1) is a significant

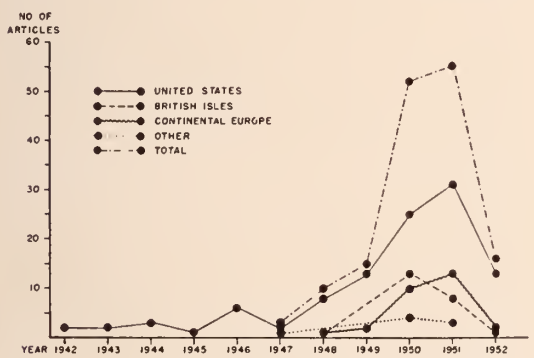


Fig. 1. Regional distribution of representative periodical literature on retrolental fibroplasia. [7]

index of the geographic distribution of the disease, its increasing incidence, the increasing recognition of its importance, and the widening responsibility felt for it by ophthalmologists and nonophthalmologists alike.

The 59 articles listed from journals beyond the Continental United States include almost no 1952 publications. The largest number, 23, appeared in British journals. There are only single listings from five countries (Switzerland, Australia, Palestine, Cuba and Hawaii) and only two listings from several other countries. Most of the articles listed in the foreign literature were published in 1950 and 1951 (Fig. 2). There is only one for-

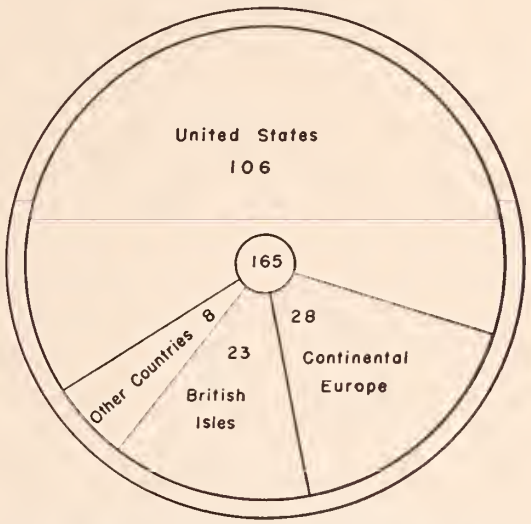


Fig. 2. Yearly regional distribution of representative periodical literature on retrolental fibroplasia. [7]

eign listing for 1947 and only two for 1948.

Of the 106 articles listed from the United States medical literature, 73 appeared in the specialty journals. There are two listings for 1942, and 56 of the 73 papers appeared after 1948. There are 15 listings from the pediatric journals, all after 1947 and all but four after 1949. The remaining 18 listings, most of them after 1948, include five from regional and five from state journals, three (exclusive of editorials) from the *Journal of the American Medical Association*, two from experimental journals, two from obstetric journals and one from a journal of public health. I do not know any more convincing demonstration of the increasing importance of this disease, or any better evidence of the widening interest in it, than this regional, chronologic, and specialty distribution of the literature on the subject.

In his first report on this disease Terry [1] called it a fibroblastic overgrowth of persistent vascular sheath behind the crystalline lens. As he continued his work

on it, the term retrolental fibroplasia was suggested to him by Harry K. Messenger,[8] and he accepted it as probably as satisfactory as any other that could be devised; the term, Terry pointed out, had not been used for any other condition and all the pathologic changes were apparently related to mesodermal overgrowth or persistence of embryonic mesodermal tissue.

When Krause[9] reported his first cases in 1946, he took the position that cerebral changes were part of the picture and that the disease should be called encephalo-ophthalmic dysplasia. It has since been pointed out that the cases he reported also included instances of retinal dysplasia. The retinopathy of prematurity, as suggested by Heath,[10] is a more reasonable term, if only because fibrous material occurs back of the lens in a number of other diseases. As often happens, however, although the concept of the etiology and pathology of the disease has changed, the term retrolental fibroplasia has continued in use. The nomenclature may not be precise, but it has become accepted by virtue of usage and it will probably continue to be used.

PATHOLOGIC PROCESS

Like many other apparently new diseases, retrolental fibroplasia seems to have existed for some time before it was recognized as such. Howard, in 1851, is usually credited with the first description, but Ryan[11] states that the first case was recorded by Travers in 1820. Whether all the cases recorded under other names were actually instances of what we now know as retrolental fibroplasia is perhaps open to doubt. For that matter, I am not so sure that all the cases reported since 1942 are actual instances of the disease.

At any rate, the credit for the first description of the disease belongs to Terry,[1] who in 1942 described a personally observed case and listed four others of which he had knowledge. The case which he observed, and the numerous cases recorded in the years immediately following his report, were characterized, in general, by the presence of an opaque, vascularized, retrolental membrane; a smaller than normal globe; a shallow anterior chamber; rather frequent anterior synechias; rather frequent detachment of the retina; and, if the ophthalmoscopic examination had been sufficiently thorough, the presence of elongated, dentate ciliary processes in the extreme periphery of the membrane behind the iris.

This is a perfectly correct picture of retrolental fibroplasia, but it is not the whole picture or the primary picture. A number of years were to pass before it was realized that it was the picture of the disease in its advanced stage, after the original process has been obscured by secondary changes. It was not until 1948 that Owens and Owens[12] from the Wilmer Institute reported the results of a study of 111 (of 214) premature infants who were followed for six months or more and 5 of whom developed retrolental fibroplasia. The study of these children from birth produced the following data:

In every instance the external appearance of the eyes was normal and examination of the fundus at first revealed no disease. The earliest detectable abnormality was a slight dilatation of the retinal arteries and veins. The dilatation gradually increased, particularly on the venous side; some of the veins were eventually three times their normal size. As the vessels increased in size, they also became tortuous. This was particularly true of the arteries, which often assumed the shape of hairpin curves.

The angiomatous dilatation and tortuosity of the vessels were soon followed by the appearance of one or more small, grayish-yellow elevations in the far periphery of the retina. Their identification was aided by the somewhat greater caliber of the vessels extending into the involved quadrant. These elevations, which were 1 to 3 diopters in height, were solid-looking and were slightly pigmented about the bases. Tortuous retinal vessels coursed over them, sometimes ascending the crest in a pattern like a crow's foot. As the elevations increased in size, the margins

of the disc became blurred, and generalized retinal edema developed. Other grayish-yellow areas were scattered throughout the fundus.

The next step in the pathologic process was the appearance of a grayish membrane, with numerous vessels coursing over it, which billowed forward in folds at the periphery of the retrolental space. Apparently it represented the anterior portion of the large masses of swollen retina. At this stage the fundus could be seen only hazily. Bands of tissue extended from the areas of detached retina into the vitreous, and between them a yellowish-red fundal reflex was visible.

In the final stage of the acute process a complete retrolental membrane was formed by gradual extension and fusion of the peripheral retinal folds. Broad ciliary processes extended onto the membrane at its periphery and numerous vessels were seen on its surface. At this stage the diameter of the cornea was much smaller than normal, the anterior chamber was shallow, posterior synechias formed, and the iris took on a grayish, atrophic appearance.

Secondary changes described by Owens and Owens were essentially those originally described by Terry.[1] They did not, however, appear in all cases. The primary process, in fact, did not go on to completion in all cases. The course of the disease might be interrupted at any stage, the pathologic changes remaining stationary or even regressing.

In 1951, after the observation of a larger series of cases, Owens and Owens reported with Friedenwald[13] that retrolental fibroplasia appears in three stages. The first stage is characterized by dilatation and tortuosity of the retinal vessels, with the development of new vessels and capillary varices. The second stage is characterized by the appearance of grayish retinal elevations, which may be localized or generalized, and small retinal hemorrhages. The third stage is characterized by the extension of newly formed vessels and supporting tissue from the retina into the vitreous, with detachment of the retina. The extent of the destruction in the final cicatricial stage depends upon the severity of the acute or active process and the amount of regression which occurs as activity subsides.

On the basis of a histologic study of 17 eyes secured from 10 patients, Friedenwald, Owens and Owens[13] reported the following observations:

The fundamental pathologic morphology in retrolental fibroplasia is proliferation of capillary endothelium with abnormal budding of capillaries in the nerve fiber layer of the retina. Surrounding the capillary proliferation are increased numbers of glial cells. Small areas of edema and hemorrhage may occur in the thickened nerve fiber layer. No inflammatory infiltrates are seen in the ocular tissues in these early stages. With further progression, small preretinal and vitreous hemorrhages occur. The newly formed capillaries break through the internal limiting membrane and extend over the surface of the retina and into the vitreous, accompanied by a delicate network of fibrous tissue suggestive of retinitis proliferans. Retinal detachment and disorganization follow. The retrolental membrane is formed by fusion of the detached retinal folds.

The studies of Owens and Owens[12] not only elucidated the pathologic process in retrolental fibroplasia, they had another important result. Terry had originally suggested that the cause of the disease was persistence of some part of the tunica vasculosa lentis system, the growth of embryonic tissue behind the crystalline lens, or the persistence of fibrillar structures of the vitreous humor. His idea was that premature birth occurs early enough for the hyaloid artery with its tunica vasculosa lentis and pupillary membrane to be patent. His reasoning was that since the hyaloid artery does not normally close until four to six weeks before term, prematurity might be an important factor not only in preventing its normal involution but also in producing an overgrowth

of supporting tissue. The studies from the Wilmer Institute eliminated this concept by the demonstration that the visible remnants of the hyaloid artery had disappeared before the onset of the disease. Similarly, these studies eliminated Reese and Payne's [14] hypothesis that the basic lesion in retrolental fibroplasia is persistence, in part or in toto, of the primary vitreous.

INCIDENCE

Perhaps the most extraordinary fact about retrolental fibroplasia is its increasing incidence in the United States. Only occasional and sporadic cases, which may or may not be instances of the disease, were recorded before 1942. Some cases were undoubtedly overlooked. One sees, occasionally, adolescents, or even adults, who have a lifetime history of impaired vision and whose examinations suggest that they may have had the disease, unrecognized, in childhood. The acute cases were certainly overlooked until 1949, when Owens and Owens [12] published their observations on this phase of the disease, and their inclusion in the series reported since that time explains some part of the recent increase.

It does not, however, explain all of it, or even the major part of it, nor does any other fact. Furthermore, no fact or theory explains the widely variable incidence in different parts of this country, or the variation between hospital and hospital in the same locality, or the far smaller incidence outside of the United States.

Retrolental fibroplasia was apparently originally confined to Boston, New York, and Chicago and areas immediately adjacent to these cities. Then it began to appear in other areas, and to appear in greater numbers, though in most irregular fashion. No cases were observed at the Wilmer Institute until 1945. [12] During the next three years the incidence was about stationary, between 15 and 20 per cent of all premature children. According to Krause, [15] the incidence in the University of Chicago Hospital in children weighing less than 1,500 gm. at birth rose from 11 per cent in 1945 to 36 per cent in 1946, 45 per cent in 1947, and 86 per cent in the first half of 1948. The incidence has fluctuated from year to year at the Boston Lying-In Hospital [16] and at the New York Eye Institute and the Babies Hospital. [5] The distribution of cases at the Babies Hospital,[17] during 1950 and 1951, is as remarkable as it is inexplicable: In spite of no measurable change in any phase of clinical management, including the use of oxygen, the disease developed in only 24 of the 230 infants born prematurely during 1950, against 56 in the 207 infants born in 1951.

As the literature indicates, retrolental fibroplasia appeared later in other countries than in the United States. [7] In most of them it is still an uncommon or actually rare disease. Furthermore, in Great Britain, where it is more frequent than it is in any country outside of the United States, it is appearing, according to Bembridge and his co-authors, [18] in the same curiously uneven and unpredictable fashion as in the United States. In Sweden, where a systematic search for cases was undertaken after the disease was first reported in 1948, the majority of cases were found in the populous districts and along the coast. [7]

The statement is frequently made that the disease is commoner in males, but as one examines series after series, the differences seem insignificant or nonexistent. In the 80 cases studied by Silverman and his associates, [17] for instance, at the Babies Hospital in New York, there were 39 boys and 41 girls. At the Boston City Lying-In Hospital [16] the sex distribution was approximately equal but in 1945, for some inexplicable reason, all 12 cases occurred in males. At the Providence Lying-In Hospital the male incidence was twice as high as the female. [16]

The racial incidence is hard to determine, one reason being that in many series no statement is made on this point. The reported series are chiefly made up of white babies, but one reason is that many of them consist chiefly of referred

private patients. Krause,[9] in 1946, stated that no cases had been observed at the Providence Hospital for Negroes. The figures from Charity Hospital of Louisiana at New Orleans are of dubious value since it is only relatively recently that the disease began to appear there. *

Social status plays no part in the incidence. The reported cases cover the financial range from wealth to indigence and the educational range from ignorance to the learned professions.

ETIOLOGIC CONSIDERATIONS

Prematurity.—The one indisputable etiologic fact in retrolental fibroplasia is that it is a disease of prematurity. It is only occasionally observed in full-term children. It is still true that the frequency is greater the more premature the children, but as the incidence is increasing, the disease seems to be extending into the more nearly mature groups. All the discussion goes back to what Terry[1] said in his first report in 1942, that some new factor has apparently arisen in extreme prematurity, though what the factor is remains to be demonstrated.

A number of observations have been made in respect to prematurity. There is universal agreement that the disease is most common in children of low birth weight. The highest incidence is in children weighing less than 4 pounds, and it is still fairly exceptional to find it in those weighing more than 4½ pounds. It was once true that the incidence was inversely proportional to the birth weight, but this situation is changing. Prior to 1943, according to Kinsey and Zacharias,[16] only 1 of 102 premature children at the Boston City Lying-In Hospital developed the disease in the weight group between 3 and 4 pounds. In the 1943-1947 period there were 33 cases in the 162 children in this group. Some observers believe that the smaller the child, the more likely it is to exhibit abnormalities on the first examination, and the more serious it is to find them at this time.

In their pioneer study of the disease in young infants Owens and Owens[12] found no cases in which the disease was present at birth and stated their belief that it is of postnatal origin. This is still the general belief, though occasional reliable observers have reported observing pathologic changes in newborn children.

In Owens and Owens' cases the first changes were usually observed between the second and fifth month. A number of other observers have reported the changes as early as the third week; I have myself seen them at this time. Guy and his associates,[19] who regard hazing of the vitreous as an early indication of the disease, have observed this change on the tenth day of life. The first changes have also been observed as late as the sixth month, but this is unusual. Guy's group formerly thought that if the ocular findings were normal within the first two weeks of life, the disease would not develop. Further observation convinced them that this point of view was not correct. Silverman and his associates[17] found, unexpectedly, that the disease had a later onset in smaller children and an earlier onset in larger children. They also found an inverse relationship between the birth weight and the period at which the first vascular signs of retrolental fibroplasia were noted. They could not establish a similar relationship between the age of clinical onset and the gestational age, though, with a single exception, clinical manifestations appeared in all of their 80 cases before the expected date of birth at full term.

Other Etiologic Factors.—Not a great deal of time need be spent discussing the possible etiologic factors in retrolental fibroplasia since, with few exceptions, most that have been considered have been promptly eliminated. The bilateral occur-

* The records of the New Orleans Charity Hospital show 16 proved cases of retrolental fibroplasia between 1949 and 1953, inclusive, and two additional possible cases. Two cases were observed in 1949, three in 1950, six in 1951, one in 1952, and four in 1953. There were 9 negro and 7 white children in the proved cases, and 7 males and 9 females. The period of gestation ranged from 5 to 8 months, with most of the cases concentrated in the sixth and seventh months. One child, not delivered in the hospital, was apparently full-term.

rence of the disease suggests a constitutional cause, but none has ever been identified. It would be tempting to postulate a familial or hereditary cause, but nothing in the disease warrants it and all the evidence is against it. The disease is frequent in twins and triplets in all reported series, but about all that can be read into that fact is that multiplicity is a common cause of premature birth. The occurrence of the disease in identical but not fraternal twins and triplets seems to lend support to the theory of genetic origin, but the disease also occurs in single twins and triplets, as well as in both children in nonidentical twinning.

The occurrence of other defects which might support the idea of a congenital origin is actually rather low. Certainly, they occur with no more frequency than in premature children who do not develop the disease. The single apparent exception is hemangioma, the incidence of which is in the neighborhood of 5 to 20 per cent in many reported series. This is about the frequency in children whose eyes remain unaffected. Reese and Payne,[14] in 1946, suggested that the primary lesion of retrolental fibroplasia might be regarded as hemangioma, or as analgous to it, but there has been no support for this theory.

Krause's[9] idea that cerebral anomalies are part of the syndrome has also won no support. As a matter of fact, mental retardation is apparently no more frequent in premature children with the disease than in those without it. In 1950 Krause and his group[20] elaborated his original idea by suggesting that the disease might occur in two forms, one of prenatal origin, with 80 per cent or more of mental defectives, and a postnatal form, in which about half of the children are mentally retarded.

My own experience would not support such a concept. Moreover, if these children seem mentally retarded, there may be other explanations. I have had under observation since he was 3 months old a little boy who is now 4½ years old. When I first saw him, he had no apparent vision, he would not open his eyes in the light, and a typical gray reflex was present. As the disease progressed the anterior chamber became shallow, posterior synechias formed, the cornea was enlarged and cloudy, and secondary glaucoma developed and was so painful that the child cried almost incessantly. When he was 8 months old, on the indication of pain, I performed an iridencleisis on each eye, with almost immediate relief. His sight, of course, was irrevocably destroyed, and at the present time he has only light perception, in one eye. He has always been a difficult child and his adjustment at nursery school has been particularly poor. His teachers regarded him as mentally retarded, but since they have accepted my explanation that his apparent retardation is the result of psychologic trauma in the early months of life, and have taken that fact into account in their management of him, his adjustment has greatly improved.

The photophobia which these children present suggested light as a possible cause of their condition. Several observers have eliminated it by taping one eye, or both, immediately after birth. This practice did not prevent the disease but it did, incidentally, eliminate repeated ophthalmoscopic examinations as a possible cause.[6]

Some series, such as that of Speert and his associates,[5] show an abnormally high incidence of miscarriages and premature births in the past and subsequent histories of mothers of children with retrolental fibroplasia. This seems of no great significance, since there is an established family susceptibility to both abnormalities. Some series, particularly the one reported by Exline and Harrington[21] from the New Orleans Charity Hospital, show a rather high incidence of such maternal complications as pre-eclampsia, eclampsia, placenta previa, and premature separation of the placenta, but these are, in themselves, all causes of prematurity. Many series have not been studied from this standpoint; all should be. The ages of the parents, parental syphilis, Rh incompatibility, the prepartal management and medication

of the mother, and maternal nutrition have all been excluded.

No specific infective or metabolic maternal disease has ever been identified, though this seems the most reasonable of all hypotheses. The theory of a subclinical maternal infection has been advanced but not substantiated. Rubella has appeared in an occasional case, but it is well known that retrolental fibroplasia is not related to this disease.

Most observers consider parity a matter of no great significance, but Kinsey and Zacharias think that it may be important.[16] In their series the incidence of the disease was less than half (9.5 per cent) in first-born premature children as compared with children of succeeding pregnancies (19.7 per cent). One or two other observers have the same idea, but still others believe that the first child is more frequently affected.

As to the children themselves, it would seem that there is no possible cause which has not been suggested and eliminated, including methods of feeding; the time of weaning, if breast feeding has been practised; dehydration from withholding food for the first day or two after delivery; transfusions; possible vitamin A or vitamin E deficiency; the use of water-miscible vitamin supplements; and the use of iron. Silverman and his associates[17] are undoubtedly correct in their statement that no correlation can be established between the appearance, or the time of appearance, of ocular changes and the time of administration, duration of administration, or withdrawal, of medicinal iron, water-soluble vitamins, low-fat formulas, anti-bacterial drugs, or transfusion therapy. The disease has appeared in infants not treated by these measures and has not appeared, or has appeared and regressed, in infants treated by them. If the solution of the etiology of retrolental fibroplasia is along the lines of management of the newborn child, the key to the riddle has not yet been found, and that not for lack of intensive studies directed to this end.

The Role of Oxygen.—The only investigation along the lines of pediatric management which has led to any positive results has to do with the use of oxygen and the theory of anoxia.

Ingalls[22] seems to have been the first to advance the theory that sublethal oxygen deficits resulting from such conditions as antepartum hemorrhage, placenta previa or eclampsia might lead to permanent damage of the fetal vascular tissue. Experimentally, he obtained eye defects somewhat similar to the lesions of retrolental fibroplasia by subjecting rats to anoxic insults in the course of pregnancy. Szewczyk[23] was the first to suggest, and to advance proof for the suggestion, that retrolental fibroplasia is due to subclinical anoxia at a period of life when the incompletely developed retina is utilizing oxygen at a particularly rapid rate. His theory is that the vascular engorgement present in these cases is a compensatory mechanism, which does not appear when there is no lack of oxygen. If there is a lack, and it is not satisfied, the condition progresses to edema of the retina, transudation, hemorrhage, retinal separation, atrophy and fibrosis.

The proof advanced for this theory is persuasive. In 1951, when the duration of care of premature babies in oxygen had to be shortened at the Christian Welfare Hospital in St. Louis because of increased admissions, the incidence of retrolental fibroplasia rose alarmingly. Yet the records showed that the children who developed the disease had been kept in oxygen on an average of ten days longer than those who did not. Since the only criteria used to determine the length of the stay in the incubators were the color, breathing and activity of the child, it was concluded that the children kept in them longest were actually more oxygen-deficient than the others. There was no indication of ocular abnormalities until they were removed from the incubators.

Szewczyk's first report dealt with 9 children who presented vascular engorgement, tortuosity of the vessels, retinal hemorrhages and early retinal detach-

ment after they were removed from the incubators. Their eyes improved dramatically, sometimes within twenty-four hours, when they were replaced in oxygen, in a concentration of 60 to 70 per cent. The fundi of all of these children were eventually normal except for some residual tortuosity of the retinal vessels. The changes characteristic of retrolental fibroplasia were induced rapidly in 7 children who were removed from a 50 per cent concentration of oxygen in the incubators and placed in a 22 per cent concentration in bassinets. Within twenty-four to forty-eight hours dilatation of the retinal vessels was apparent. Within three to four days the vessels were tortuous, neovascularization occurred, and hemorrhages and progressive retinal separation also appeared. There was rapid reversal of the changes, usually within twenty-four hours, when the infants were placed in 60 per cent oxygen, and almost complete regression occurred within three to four days. In Szewczyk's [24] second report, which covered a larger number of cases, he also noted the effect of respiratory disease and the associated oxygen lack on the state of the eyes. In this report he carried his argument a step further by stating that retrolental fibroplasia can be caused by failure to withdraw oxygen gradually, to permit the child to become acclimatized to the lower oxygen concentration of the atmosphere.

The present opinion in regard to oxygen as a factor in retrolental fibroplasia is extremely confused. Bedrossian [25] largely supported Szewczyk's observations on the risk of rapid withdrawal of oxygen, the effect of respiratory disease, and the possibility of arresting the active vascular phase of the ocular changes by replacing the infant in oxygen. He does not regard oxygen as the direct cause of the disease but considers that the use of high concentrations over long periods of time may predispose to it. Two reports from Holland [26, 27] also confirm Szewczyk's observations, though in these cases regressive changes were less dramatic when the children were replaced in oxygen. Kinsey and Zacharias [16] observed that children with retrolental fibroplasia had been kept in oxygen for longer periods than those who did not develop it.

Numerous observers regard high concentrations of oxygen as predisposing to the disease. LaMotte, [28] in discussing Bedrossian's paper, stated that at the Delaware Hospital in Wilmington the incidence had been reduced from 1:3 (33.8 per cent) to 1:27 (3.7 per cent) in children weighing less than 4 pounds in the weight group predisposed to the development of the disease by using oxygen in the lowest possible concentration for the shortest period of time compatible with survival in infants. Ryan's [11] observations were to the same effect. Retrolental fibroplasia did not occur at the Woman's Hospital in Melbourne until after oxygen incubators had been installed and oxygen began to be given liberally to premature infants, whether they needed it or not. The disease disappeared after the use of oxygen was restricted to children who were actually cyanosed.

As the situation stands now, we must believe that both the use of oxygen and the lack of oxygen cause retrolental fibroplasia in premature children, and that its use also halts the progression of the disease and reverses the pathologic process which has occurred. What adds to the confusion in this theory, as in others which have been advanced, is that much of the evidence directly in conflict with other evidence, and vice versa, has been adduced by authorities eminent in the field of ophthalmology and of unimpeachable experience and probity.

Part of the difficulty arises from the fact that a great many published reports are lacking in important details. Part of it also arises from the fact that no single series is really large enough to be significant statistically. Finally, because of the varying conditions under which most of the studies were made, it is impossible to combine the various reports and analyze them as a total study.

The Cooperative Study of Environmental Oxygen and Retrolental Fibroplasia was set up July 1, 1953, in nineteen cooperating hospitals in various parts of the country, to overcome these difficulties, at least insofar as oxygen is concerned. The survey is being financed jointly by the Institute of Neurology and Blindness of the National Institutes of Health, the U. S. Public Health Service, the National Foundation for Eye Research, and the National Society for the Prevention of Blindness. It is under the chairmanship of V. Everett Kinsey, with the Kresge Eye Institute serving as the coordinating center, and is conducted by pediatricians and ophthalmologists in the cooperating hospitals. The purpose of the study is to determine whether the incidence of retrolental fibroplasia is dependent upon the amount of oxygen given the premature infant. A second purpose is to obtain information concerning the premature child and his parents which might be useful in the interpretation of the results of this study and in future investigations.

The investigation is limited to infants weighing 1,500 gm. or less at birth. The coordination center in Detroit is notified by wire of the birth of each premature child and the baby, by direction from the center, is given either a concentration of oxygen higher than 50 per cent for 28 days or as little oxygen as would be safe in the light of his condition. Concentrations of oxygen are checked regularly by specified methods. A tapering-off routine is followed when the child is removed from the incubator. With the exception of oxygen administration, the feeding plans, administration of vitamins (E and B are not given), chemotherapy, and other medications and management are the same in both groups.

The eyes are examined by a fixed technique and schedule, beginning as soon as possible after birth and continuing through the twenty-fifth week of life. As far as possible, ophthalmologists are kept in ignorance of the group to which the child under examination belongs. Retrolental fibroplasia is classified according to a standard scheme, and uniform records are provided for notations.

The following classification of retrolental fibroplasia is used in this study:

Active Phase

Stage 1. Dilatation and tortuosity of retinal vessels. Hemorrhages may or may not be present. Early neovascularization in the extreme periphery of the visible fundus may be present.

Stage 2. Stage 1 plus neovascularization and some peripheral retinal clouding. Hemorrhages are usually present. Vitreous clouding may or may not be present. Spontaneous regression may occur.

Stage 3. Stage 2 plus retinal detachment in the periphery of the fundus. Spontaneous regression is unlikely.

Stage 4. Hemispheric or circumferential retinal detachment There is elevation of the retina over a large area, but some of it is still in position.

Stage 5. Complete retinal detachment.

Cicatricial Phase

Stage 1. Small mass of opaque tissue in periphery of the fundus without visible retinal detachment. The fundus may have a pale appearance. The blood vessels may be attenuated.

Stage. 2. Larger mass of opaque tissue in periphery of the fundus with some localized retinal detachment. The disc is distorted by traction toward the side of the tissue mass, which is usually temporally located. Cases ending in stage 1 or 2 have useful vision.

Stage 3. Larger mass of opaque tissue in periphery incorporating a retinal fold which extends to the disc. Visual acuity varies from 5/200 to 20/50.

Stage 4. Retrolental tissue covering part of pupillary area. A small area of attached retina may still be visible, or only a red reflex over a sector of the fundus may be seen.

Stage 5. Retrolental tissue covering entire pupillary area. No fundus reflex is present.

One of the conditions of participation in this study is that the results in individual hospitals shall not be tabulated, published or discussed until the results of the whole study have been presented. I would therefore be in no position to discuss the data at the New Orleans Charity Hospital even if I were aware of the results, which I am not. What will come of this investigation it is not possible to say, except that the mass of material available and the controlled conditions of the study should make it possible to establish, one way or the other, the role of

oxygen in the causation of retrolental fibroplasia. Even if this particular problem is not solved, the method of the investigation should serve as an example for future studies along other lines.

DIAGNOSIS

The diagnosis of retrolental fibroplasia is not ordinarily difficult. Prematurity is the first clue. On the first examination the eyes are normal in size, the cornea and other structures, including the fundus, show no abnormality, and the anterior chamber is not abnormally shallow. The onset is shortly after birth, in most cases before the eighth week of life. The disease is characteristically bilateral, though one eye is often more severely affected than the other. The typical early findings are engorgement and dilatation of the retinal vessels, edema of the retina, small peripheral hemorrhages, and neovascularization, which is also a late finding. Other later findings include posterior synechias, detachment of the retina, a shallow anterior chamber, and secondary glaucoma. In the terminal stage, although the eyes may be grossly normal, they are often smaller than normal. The sockets are deepened, and the eyes seem sunken because of the loss of retro-orbital fat. If the child is not seen until he is 12 or 14 months old, he will show a distinctive tendency to rub his eyes with the backs of his hands.

Guy and his associates,[19] who state that abnormalities may be observed within the first few days of life, list as possible abnormal findings at this time a vitreous haze, myopia requiring a minus correction of 1 or more diopters on the ophthalmoscope, and dilatation and tortuosity of the retinal vessels. Many would not agree with all of these criteria and would regard haziness of the vitreous, enlargement of the retinal veins, and a grayish coloration of the retinal periphery as normal findings in very young children.

The differential diagnosis, while it may include any disease characterized by disorganization of the retina and vitreous, chiefly concerns persistent hyperplastic vitreous, retinal dysplasia, and retinoblastoma.

Persistence of the hyperplastic vitreous is uncommon. It is usually bilateral. The involved eye is often somewhat smaller than the normal eye. The opaque tissue behind the lens is densest in the central portion and fades away in the periphery, where long ciliary processes are invariably seen. If the opaque tissue behind the lens is sufficiently thin about the periphery to permit a view of the interior of the eye, a persistent hyaloid artery can usually be demonstrated.

Retinal dysplasia is also uncommon. It is always bilateral. It occurs in the newborn but it is not related to prematurity. The eyes are usually microphthalmic and there are associated malformations, chiefly of the heart, vascular system, or skeleton, or of the brain, with mental retardation. One or the other of these conditions frequently causes early death. Histologically the retina shows signs of dysplasia and often of rosette-formation. The fibrous tissue behind the lens seems to be persistent primary vitreous. Secondary vitreous is usually scanty if it is formed at all.

Retinoblastoma usually occurs in full-term infants and does not become evident until the end of the second year. It is primarily unilateral. The parents usually bring the child for consultation because they have noted a gray reflex in the fundus. The affected eye tends to cross, but there are no other external abnormalities. The anterior chamber, iris and lens are all clear. In the fundus is an irregular mass, which sometimes can be seen grossly. Retinal detachment is frequent. The differential diagnosis of retinoblastoma is essential, for it is an extremely malignant tumor and prompt enucleation is indicated, whereas this operation is never indicated in retrolental fibroplasia, at least for the primary disease.

Ophthalmoscopy.—Retrolental fibroplasia will not be recognized until it has reached an advanced stage if no search is made for it until it becomes clinically evi-

dent. The early stages are demonstrable only by the ophthalmoscope, and examinations must begin as soon as is practical after birth and must be carried out serially, at regular intervals. The best plan is to examine the child weekly until it is three months old. Then, if there is no evidence of the disease, the examinations are made monthly. If pathologic changes are apparent, they are made at least once a week. Some observers believe that ophthalmoscopy may be safely discontinued at three months, in the belief that if the condition is to develop there will be evidence of it by this time. This is not a safe plan. In a number of reported cases, as well as in my own experience, the first manifestations of the disease appeared after the third month. The examinations should therefore be continued until the child is at least six months old, and my personal preference is to continue them for nine months.

This is, of course, more easily said than done. The ophthalmoscopic examination of a young child is often a real ordeal, aside from the fact that the average premature nursery does not have the facilities which would simplify the procedure. At the best, a thorough examination with the electric ophthalmoscope consumes twenty to thirty minutes. Unless the periphery and posterior segment are included, early changes as well as residua may be overlooked.

Good dilatation of the pupils is essential for a successful examination. We prefer to use 2 per cent homatropine hydrobromide and 10 per cent neosynephrine (phenylephrine hydrochloride), one drop in each eye. Dilatation is adequate within the hour, even when the iris is heavily pigmented. Examination is almost impossible in the incubator and the best plan is to remove the child and wrap him securely in a blanket while it is carried out.

General anesthesia is occasionally necessary, particularly as the child grows older, but it can usually be avoided by a few common sense precautions. Our own plan is to instruct the mother not to feed the child until he is brought to the office. He is then fed, and is usually quiet for a long enough time thereafter to permit the examination to be carried out.

PROPHYLAXIS AND THERAPY

Not much time need be spent on either the prophylaxis or the therapy of retrolental fibroplasia. There is no prophylaxis except for the obstetrician to use every means at his command to forestall premature delivery. He would do this in any event, but the responsibility is heavier at the present time in the light of what we know may happen to premature children, and will inevitably happen to a certain proportion of them. In the present state of the oxygen controversy it also seems the part of wisdom to use oxygen with discretion, avoiding excessive concentrations, giving it only when it is necessary, giving only as much as is necessary, and weaning the child from it by withdrawing it gradually.

There is not much more to be said for therapy. X-ray therapy is useful in the control of vascularization but it has given no results in retrolental fibroplasia. Corticotropin and cortisone seemed logical, on the ground that hyperadrenalism inhibits the growth of the capillaries and that the premature infant, because of prematurity, is deficient in the hormones of the adrenal cortex during its early postnatal life. The original results seemed promising, but further observation altered the picture. Reese,[29] in fact, stated that he had obtained specimens from two patients in whose deaths ACTH had played an important, if not the chief, role. One of the worst cases of retrolental fibroplasia which I have ever seen was treated by this agent by the intramuscular and subconjunctival routes, and I have long since discontinued its use.

Excision of the retrolental mass was practised in some of the earlier cases, but the operation was abandoned when it was found that the excised mass was composed largely of retinal elements. Reese and Blodi[30] reported operating on 52 eyes,

in an attempt to remove enough tissue in the pupillary area to permit the use of any partially attached area of the retina. In 27 cases the condition was the same after operation and in 16 cases it was worse. In the remaining cases, although there was some objective improvement, there was no certainty of functional improvement in any instance. All of the excised tissue contained retinal elements, which were often disorganized and degenerating. Neither this technique nor any other surgical procedure which has been attempted seems rational, and none of them has proved useful. Surgery for glaucoma, however, may be necessary if the eyes become intractably painful. It should always be a last resort.

At the present time the only therapy at all worthwhile seems to be the use of mydriatics, to prevent or control synechia formation, which, in turn, may prevent secondary glaucoma. My own preference is for drops of atropine and scopolamine. The inflammatory reaction is often severe enough to occlude the pupillary area completely, and this medication, if the child has any degree of retinal function, may give him a pupil which is open and which he can see through.

In the evaluation of any form of prophylaxis or therapy which may seem to give results, it must be remembered that retrolental fibroplasia is a self-limited disease, which may regress naturally, and that it is characterized by unpredictable fluctuations of incidence. It is entirely possible that the results which may seem to have been accomplished by therapy may be explained by these reasons.

JOINT RESPONSIBILITY FOR RETROLENTAL FIBROPLASIA

At the present time retrolental fibroplasia is a matter of great concern in teaching hospitals and research centers. Otherwise, there is no general sense of responsibility about it. One reason for this attitude is the feeling of many obstetricians and pediatricians that since therapy is so ineffective, the mere identification of the disease serves no useful purpose. Another reason is the expense connected with such investigations. The question of fees cannot be ignored in private practice.

A final reason for failure to carry out routine ophthalmoscopy on all premature children in private practice is the cumbersomeness of pediatric-ophthalmic consultation. Benton's [31] plan simplifies this aspect of the problem. He proposes that in private hospitals each pediatrician designate, in advance, the ophthalmologist whom he wishes to examine his premature babies, so that each child may come under ophthalmologic care as a matter of routine as soon as the necessary consent has been obtained from the parents. This is a simple and sensible plan, which all obstetricians and pediatricians would do well to adopt, since they are the ones who must take the steps which bring the ophthalmologist into the case. At the present time there is not much that he can do beyond diagnosing or eliminating the disease, but it is inconceivable that some technique will not eventually be detected to control this grave complication of prematurity.

SUMMARY

Retrolental fibroplasia, which was an unknown disease up to 1942, is now the commonest cause of blindness in young children. Its incidence has increased enormously in the last several years. The etiology is unknown beyond the fact that it is a disease of prematurity. There is no known method of prophylaxis or therapy. The most hopeful aspect of the disease at the present time is that pediatricians and obstetricians have come to realize that it is their responsibility also. The ophthalmologist does not enter the case until they call him in. It would be a wise plan to set up a system in all hospitals in which such consultations would be routine.

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OFFICERS OF THE LOUISIANA STATE MEDICAL SOCIETY FOR 1954 - 1955

At the Seventy-fourth Annual Meeting of the Louisiana State Medical Society, new officers were elected. Considering the widespread activities and responsibilities that are part of organized medicine today, it is fortunate to again have a group of physicians in office who are capable and willing to uphold the standards and carry on the traditions consistent with the illustrious history of our Society.

Dr. Walter Moss, widely known surgeon of Lake Charles, is President for 1954-1955. His well rounded professional training included interneship at Charity Hospital of Louisiana at New Orleans, followed by a House Surgeonship for four years. He is a fellow of the American College of Surgeons and a diplomate of the American Board of Surgery, as well as a fellow of the International College of Surgeons. His work in the field of organized medicine has extended over many years. He is a former First Vice President of the State Society, and was President of the Calcasieu Medical Society during 1936-1937. He has served the State of Louisiana as Chairman of the State Board of Institutions in 1941-1942, and his City, Lake Charles, where he is now on the Board of Directors of the Association of Commerce. He was President of the Tulane Alumni Association in 1946-1947. We feel sure that he will not only carry on our best traditions, but in these changing times, when tradition alone does not suffice, will wage the good fight and advance the cause of organized medicine.

Dr. Max M. Green, prominent urologist of New Orleans, becomes President-elect. Dr. Green interned at Charity Hospital, New Orleans, and then served as Resident in Urology during 1930-1932. He is a fellow of the American College of Surgeons and a diplomate of the American Board of Urology. He has been for many years active in the affairs of the Orleans Parish Medical Society, and was a member of its Board of Directors from 1940 through 1949, during which time he held the positions of Secretary, 1st Vice President, 3rd Vice President, Librarian, and in 1948 was President. He has also been Secretary of the New Orleans Graduate Medical Assembly. He is active not only in the field of organized medicine but in that of medical education also, as Assistant Professor of Urology at L.S.U. Medical School. His civic services include the Chairmanship of the Medical Committee of the Chamber of Commerce of the New Orleans Area. The Society is fortunate in having chosen a physician of his calibre as President-elect.

Dr. Henry W. Jolly, Jr., Baton Rouge, 1st Vice President, has been active in the East Baton Rouge Medical Society and was President of that Society. During the past year he has been Chairman of the Committee on Public Policy and Legislation. He has served with success and distinction in the handling of the affairs of this important committee, and is due special credit for his success in defeating the efforts of the chiropractors to secure a State license this year.

Dr. George H. Hauser, 2nd Vice President, is a distinguished pathologist of New Orleans, who has served the State Society in many capacities over a period of years. He has been active in the affairs of the Parish and State Societies, particularly on committees pertaining to pathology and public health, and has been alternate to the House of Delegates of the A. M. A. on many occasions.

The 3rd Vice President is Dr. W. A. K. Seale of Sulphur, who has worked hard and diligently in the affairs of Calcasieu Parish for many years. His energy and judgment have been useful in organizing opposition in the 7th Congressional District to the campaign of the chiropractors. He will add further stability to our councils.

Dr. C. Grenes Cole, Secretary-Treasurer, continues his term of office, and our appreciation of his experience and counsel grows with the years. His resourcefulness and energy evoke the admiration of the active members of the Society.

Chairman of the House of Delegates is Dr. W. Robyn Hardy, who enters his second year in this capacity. Although presiding for the first time this year, his expeditious and fair handling of parliamentary problems was a source of gratification.

He was materially assisted by Dr. Ralph H. Riggs of Shreveport, Vice-Chairman, whose good judgment and experience have meant much to the cause of organized medicine.

Dr. J. E. Clayton of Norco succeeds Dr. Joseph S. Kopfler, who retired as Councilor from the Second District after many years of service. Dr. Clayton has been very helpful in the organizational activities of the Second District Medical Society, and equally valuable to the Legislative Committee. The remainder of the Council is unchanged, and its personnel continues to be a source of satisfaction to the membership.

As the problems of organized medicine increase, the responsibility and urgency of the Society's affairs become a more serious burden. The profession of the State may rest assured that the administrative organization which they have chosen at the Seventy-fourth Annual Meeting is composed of capable physicians upon whose judgment and experience they can rely and whose leadership they can trust, not only in State matters, but in the fight against the ever encroaching efforts of federal control of medicine.

ORGANIZATION SECTION

The Executive Committee dedicates this section to the members of the Louisiana State Medical Society, feeling that a proper discussion of salient issues will contribute to the understanding and fortification of our Society.

An informed profession should be a wise one.

LOUISIANA LEGISLATURE

The Legislature is in session, and the expected chiropractic bill has been introduced under House Bill 111 (by Fields, et al) to regulate the practice of chiropractic and create a board of chiropractic examiners.

This bill will, in all probability, be referred to the Committee on Public Health and Quarantine, composed of the following members: Charles E. Deichmann, Chairman, Orleans Parish; James J. Villemarette, Vice-Chairman, Avoyelles Parish; Cecil R. Blair, Rapides Parish; Mrs. Bland

Cox Bruns, Orleans Parish; Geo. E. DeVille, Orleans Parish; Richard D. Guidry, Lafourche Parish; Reeves Morgan, East Feliciana Parish; Mrs. Richard S. Parrott, St. Landry Parish; Lonnie Richmond, West Carroll Parish and Ford E. Stimon, Bossier Parish. We think Woodrow Wilson, Morehouse Parish, who defeated A. P. Carter, will be the eleventh member of this committee.

You members who reside in these respective parishes should contact these representatives, best in person, or by telephone, telegram or letter immediately, asking that they support us in our efforts to protect our citizens by defeating House Bill 111, which would legalize these cultists to practice medicine in Louisiana.

We are depending upon you to do your duty, so do not let us down.

CONGRESSIONAL BILLS

We feel that the membership would like to know what is being done in Washington regarding two of the most important bills affecting organized medicine before Congress today. These bills are H.R. 8356 and H.R. 7199.

Following are two statements which are being presented before Congressional Committees by representatives of the American Medical Association. These bills deal with the President's "Re-Insurance" proposal, extended coverage under the Social Security Act to include physicians.

"I am Dr. David B. Allman of Atlantic City, New Jersey, where I am engaged in the practice of medicine. I am a member of the Board of Trustees and the Chairman of the Committee on Legislation of the American Medical Association. I am appearing here today as a representative of that Association concerning H.R. 8356, 83rd Congress.

"We are grateful to the Committee for permitting us to delay our appearance on this bill until after the joint meeting of our Committee on Legislation and the Executive Committee of the Board of Trustees which was held in Chicago last Wednesday, March 31. Our organization has now formulated a position on the bill which I shall present today.

"Inasmuch as you have been conducting hearings on this measure for some time, it is unnecessary in our statement to review the bill in detail. I should like to state at the outset, however, that the American Medical Association is in complete accord with the principal purpose of the bill, which is to promote the best possible medical care on reasonable terms. It is reassuring to the medical profession to find that the official position of the government is one of trust and confidence in the ability of private initiative to solve existing problems in the field of medical care. As was stated before this Committee last January, our Association has for many years adhered to a policy which parallels the above referred to purpose of this bill. We are also in agreement that the most feasible method of accomplishing this result for most of the people is through voluntary health insurance.

"The Association, however, seriously doubts whether the mechanism suggested in H. R. 8356 is essential and whether it will, in fact, accomplish the desired results.

"In determining its essentiality we believe that it is necessary to give full and complete consideration to the tremendous strides which voluntary health insurance has made in this country and the simultaneous improvement in benefits provided to meet the desire of the public for more adequate protection. The expansion of coverage and the improvement of benefits to cushion the economic shock of hospital, surgical and medical expenses, has been phenomenal during the past few years. Inasmuch as complete statistical data outlining this expansion and growth have been made available to your Committee by previous witnesses, I shall not repeat these figures at this time. I understand you have also been briefed on the progress and prospects of the newest area of health insurance — 'major medical expense' coverage which is designed to provide protection against the unpredictable,

the unexpected, illness, acute or chronic, the financial impact of which would seriously disrupt the family budget.

"It is our belief that the figures which have been presented hold real promise for still greater progress in health insurance coverage. This fact plus the demonstrated ability of the industry to meet the needs and demands of the public indicates to us that it is unnecessary for the federal government to enter the field. The public interest will be served best and continued progress of health insurance protected by preserving the freedom and competitive features of the present method of operation.

"It must also be emphasized that there is a limit to the number of insurable people in this country, and a limit to what can be accomplished by insurance. In any effort to solve the economic problems of medical care, it is essential to consider two groups of individuals: (1) those who are able to pay the normal costs of medical care, and (2) those who are indigent. Most of the American people fall within the first group and have access to the many forms of health insurance now offered. Some of these have elected to carry their own risk either because of their financial ability to do so or because they are not convinced of the wisdom or necessity of purchasing protection against medical expenses in advance. As the desirability of insuring against medical expenses is more generally accepted and as the improvement and development of new types of coverage evolve, it is reasonable to expect that the maximum number of 'insurables' will be covered.

"The other group—the indigent—poses distinctly different problems. These individuals do not have the funds with which to purchase insurance and are dependent, in some measure, on outside assistance for the basic necessities of life. The American Medical Association believes that if the medical care problems of this group cannot be solved by the individuals or their families, the responsibility should be assumed by the local and state government.

"As an Association we have been greatly concerned with the individuals in this category and are making efforts to aid in the solution of this very difficult problem. Through our Council on Medical Service we have undertaken a series of studies of the organization and operation of state and local indigent medical care plans which are effective in meeting the need. Fifteen such studies have been made to date and five more will be completed this summer. These reports are being published in *The Journal* of the Association and distributed to all state and county medical societies. Through this method and through the establishment of suggested criteria for such plans medical societies have been stimulated to organize an adequate program or improve an existing one.

"Recognizing that the medical profession is only one of a number of parties concerned in the total health care picture of the indigent a permanent study group comprised of representatives of the American Medical Association, the American Hospital Association, the American Dental Association, the American Public Health Association and the American Public Welfare Association has been established. Two immediate projects being undertaken by this study group are:

(1) Preparation of a basic statement on the total problem of health care for the indigent.

(2) A series of joint field studies by staff personnel of the various agencies represented so as to consider the problems, operations, and services of all groups concerned with providing medical, hospital and related services to the indigent.

"Finally, the Association is considering the establishment of a field service to assist state and county medical societies in developing programs in this field. As a pilot project along this line, the field staff spent five weeks in one state during the summer of 1953 to help collect basic data and information which might lead to a

formal state organization and to adequate financing for an indigent medical care program.

"We hope that expanded efforts by private agencies and an awakening by state and local governments to their responsibilities to the indigent will lead to a solution to the problem. It is not clear, however, how persons in the indigent group will be assisted by the provisions of the bill under consideration, without some form of federal subsidization paid through the insurance companies. We believe this would be objectionable.

"As physicians, we have a real interest in this bill; nevertheless, we do not feel qualified to comment authoritatively on its technical insurance and reinsurance aspects. We have, therefore, in considering the bill, met with representatives of the insurance industry and have studied carefully their testimony before this Committee during the past week. We have noted the reluctance and in some instances, the expressed fear with which these insurance authorities have viewed the proposal.

"We were impressed by the comments of Mr. Edwin J. Faulkner when he said, in testifying before your Committee on March 26:

> 'Government reinsurance of health insurance plans would introduce no magic into the field of financing health care costs. Reinsurance can distribute risks among insurers just as insurance distributes them among policyholders, but no matter how far this distribution is carried, it must be sound to succeed. Reinsurance does not increase the ability of the insurer to sell protection to the unwilling buyer. Reinsurance does not reduce the cost of insurance. Reinsurance does not make insurance available to any class of risk or geographic area not now within the capabilities of voluntary insurers to reach.'

"Another statement by Mr. John H. Miller on behalf of three health and accident insurance associations with over 300 member companies stated, in part:

> 'Reinsurance, therefore, does not provide a means of making insurable what would otherwise be an uninsurable risk. It does not add to the aggregate resources of the insurers. It does not help to sell insurance nor does it reduce the cost of insurance. If our citizens are not to labor under a misunderstanding, it is essential for them to realize that reinsurance is not a panacea, and that it does not provide additional funds to finance the cost of medical care. As has been made clear in this presentation of the program, voluntary insurance cannot relieve the community of the burden of providing medical care to the indigent nor is it helpful to those who presently cannot qualify for it, and reinsurance does not enhance the power of insurance in these areas. The reinsurance facilities have been proposed with the purpose of extending the frontiers of insurance effectiveness. The rapid development of accident and sickness insurance has, however, been accomplished with little use of the already extensive reinsurance facilities available to the insurers, and we see no evidence that progress would have been augmented had reinsurance been used to a greater extent. The underwriting, or risk bearing, capacity of the companies in this business is very large.'

"These and other expressions of opinions from the insurance industry plus our own analysis of the bill have led us to the conclusion that a federal reinsurance system such as proposed by the bill could not be expected to achieve the objectives set forth in this legislation. In addition, the measure as drawn would place extensive regulatory power in the Secretary of the Department of Health, Education and Welfare. The concentration and delegation of such potential power and control over a vital branch of American industry in a department of the Executive Branch of the government without clear and convincing evidence of need is extremely difficult to justify.

"Let me reiterate that we believe the sponsors of this proposal are deserving of

commendation in attempting to spread voluntary health insurance through private initiative. Nevertheless it is the belief of the American Medical Association that the bill will not fulfill its intended purpose and may, in fact, inhibit the satisfactory progress which is now being made by voluntary insurance companies. For these reasons it is the recommendation of the Association that this bill should not be reported favorably by this Committee.

"In conclusion, let me express my appreciation for myself and for the American Medical Association in permitting an expression of our views on this bill."

"I am Dr. F. J. L. Blasingame, of Wharton, Texas, where I am engaged in the active practice of medicine. I am a member of the Board of Trustees of the American Medical Association and am appearing today on behalf of that Association in connection with H. R. 7199, 83rd Congress, currently being studied by your Committee.

"My testimony is directed to only two aspects of the bill, namely, the suggested compulsory coverage of physicians under Title II of the Social Security Act, as amended, and the 'waiver of premiums' provision included in section 106. The Association has not taken any position with regard to the other provisions of the bill which do not have primary medical implications.

"The American Medical Association strongly opposes compulsory coverage of physicians under Title II of the Social Security Act. In June 1949 the House of Delegates adopted a resolution to this effect. Another such resolution was adopted at the last meeting of the House of Delegates, in December, 1953. The most recent resolution adopted in December, 1953 provides:

'Whereas, Legislation has been introduced into the Congress providing for the extension of compulsory coverage under Title II of the Social Security Act to self-employed persons, including physicians; and

'Whereas, The House of Delegates has in the past registered its disapproval of the principle involved in this legislation; and

'Whereas, Physicians desire the continued right to establish retirement benefits for themselves on a voluntary basis rather than being compelled to participate in a tax-supported government program which they do not want; and

'Whereas, The Jenkins-Keogh bills (H.R. 10 and H.R. 11) now before the Congress provide for development of a voluntary pension program which is equitable, free from compulsion, and satisfies the retirement needs of physicians; therefore be it

'Resolved, That this House of Delegates reaffirm its support and endorsement of the voluntary pension program provided in the Jenkins-Keogh bills and its strong opposition to the extension of compulsory coverage of physicians under Title II of the Social Security Act'

"In February, 1954 the Board of Trustees again reviewed this question and reaffirmed the Association's position of opposition to compulsory coverage. The Board did determine that no objection would be raised to the extension of the Old Age and Survivors Insurance provisions of Title II so as to permit voluntary coverage of physicians.

"We consider it absolutely incompatible with the free enterprise system for a group to be compulsively covered under a governmental system of old age benefits when that group strongly and with great force opposes such coverage.

"We have carefully reviewed the report of the advisors to the Secretary of the Department of Health, Education, and Welfare and have been unable to find any reasons to justify this part of their recommendations. I am here to assure you gentlemen that the members of the medical profession do not feel discriminated against by having been excluded from the

provision of Title II of the Social Security Act. On the contrary, we believe that we are capable of planning for our security in old age and are not desirous of governmental intervention.

"Another and very practical consideration is the fact that only a small proportion of the self-employed physicians consider age 65 as a line of demarcation between their working years and retirement. Those who are able to work prefer to keep right on taking care of sick people; many of them taper off the amount of work they do as they grow older. However, in an unpublished study prepared by our Bureau of Medical Economic Research, it was found that one half of the physicians actually retiring from practice after age 65 did so after age 74.

"If forced under this program, the typical physician would be required to continue to pay OASI taxes from age 65 to age 74 or 75 before he would receive any benefits.

"This prospect of indefinite retirement for the members of another great profession was very well stated in a recent issue of the American Bar Association Journal (February, 1954) by Judge Allen L. Oliver, Chairman of the Committee on Unemployment and Social Security of the American Bar Association. I quote:

> 'In summary, the self-employed professional differs from the employed person because he is not forced into abrupt and complete retirement, because he usually continues substantially remunerative activities after age 65, because his entire life and training emphasizes individual activity rather than group treatment.'

"Old age benefits under the Act simply do not fit the economic pattern of the life of the self-employed physician. To compel him to come under the provisions of this portion of the Social Security Act would represent a failure to understand that physicians, like many other professional people, serve the citizens of their community best by following their traditional economic pattern of life. In making this comment, it is not my intention to make any inferences whatsoever regarding the applicability of Old Age and Survivors Insurance Program to the 50 million employed persons in the United States.

"I do not come here empty handed. The American Medical Association has repeatedly expressed its support of the Jenkins-Keogh bills which are now before this Committee for consideration. We are grateful to the Chairman, Mr. Reed, for having sponsored with Mr. Keogh the original bills of the previous Congress and to Mr. Jenkins, Mr. Camp, as well as Mr. Elliott and Mr. Keogh. These bills would provide a long-range plan for encouragement through tax-deferments for self-employed people to set aside limited amounts from their earned income into restricted retirement annuity or pension trust programs from which they could draw benefits on attaining age 65.

"I believe all members of this committee understand that these bills would provide only tax deferment, not tax avoidance. It would give the 11,000,000 self-employed people who want to save for their old age an opportunity to do so under conditions approximately equal to those provided by corporate pension plans approved by the Bureau of Internal Revenue under Section 165 (a) of the Federal Internal Revenue Code. H. R. 10 and 11, 83rd Congress, provide flexible arrangements which would fit the economic pattern of the life of the self-employed physician. It would encourage approximately 11,000,000 self-employed people to provide for their own retirement. I am glad to note that these identical bi-partisan bills would also grant tax-deferment encouragement to approximately 30,000,000 pensionless employed people. We support these bills heartily because they would provide prepaid pensions for all who are willing to save. We are glad to join hands in support of these measures with many other associations such as the American Bar Association, the American Dental Association, the American Institute of Accountants, and the American Farm Bureau Federation, many

of whose members are self-employed farmers. We believe that our country is so diversified and that people earn their living under so many different conditions that it is wise public policy for the Congress to provide a flexible pension system for the self-employed and to permit the pensionless employed to participate in the same program.

"The second portion of the bill concerning which I would like to comment is section 106 which proposes a waiver of premiums and the preservation of insurance rights of individuals with extended total disability. While we are pleased to note that this section of the bill includes a number of safeguards which did not appear in the bills which heretofore have been before this Committee, we are still constrained to oppose this portion of the bill because it most definitely would become an entering wedge for the regimentation of the medical profession by creating the mechanism for the adoption of a federal cash permanent and total disability benefit program, which in turn could lead to a full fledged system of compulsory sickness insurance. The provisions in this bill cannot be appraised solely as an isolated, detached effort to provide some measure of aid to the disabled worker. We believe that this and every other step in the direction of a compulsory sickness insurance system must be opposed.

"It is true that under the present system a man who is permanently or totally disabled or who goes from covered to non-covered employment during his lifetime is penalized. This is due to the fact that all of the years following the entrance of a wage earner into the Social Security System are counted as "elapsed years" and are used in determining his annual average wage, which is the key in figuring the basic Old Age and Survivors Insurance benefit. It is our recommendation that in lieu of the approach embodied in Sec. 106 the Committee give consideration to the more liberal formulae of most modern systems for computing benefits, such as those followed by most corporate pension plans and indeed by the government itself in the case of the Civil Service Retirement System. These systems involve the use of the five or ten best years during a man's working lifetime in computing retirement benefits with an allowance in the form of increment years for each year of gainful employment. This latter provision compensates a wage earner who has had a long period of covered employment and consequently has made larger contributions into the pension fund. If such a method were adopted, it would be unnecessary to consider gaps in a man's wage record, regardless of whether they were due to permanent or total disability, non-covered employment or any other cause.

"For the reasons which I have outlined above, we are opposed to the two provisions of H. R. 7199, 83rd Congress, to which my remarks have been directed."

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MEDICAL NEWS SECTION

CALENDAR

PARISH AND DISTRICT MEDICAL SOCIETY MEETINGS

Society	Date	Place
Calcasieu	Fourth Tuesday every other month	Lake Charles
East Baton Rouge	Second Tuesday of every month	Baton Rouge
Morehouse	Third Thursday of every month	Bastrop
Natchitoches	Second Tuesday of every month	
Orleans	Second Monday of every month	New Orleans
Ouachita	First Thursday of every month	Monroe
Rapides	First Monday of every month	Alexandria
Sabine	First Wednesday of every month	
Second District	Third Thursday of every month	
Shreveport	First Tuesday of every month	Shreveport
Vernon	First Thursday of every month	

SEVENTH ANNUAL MEETING AMERICAN ASSOCIATION OF BLOOD BANKS

The Seventh Annual Meeting of the American Association of Blood Banks will be held September 13-14-15, 1954, at the Shoreham Hotel, Washington, D. C. In addition to an excellent scientific program, there will be interesting exhibits, a special course for technologists, and roundtable and panel discussions led by national and international authorities. For further information, write Office of the Secretary, American Association of Blood Banks, 3500 Gaston Avenue, Dallas, Texas.

CIVIL DEFENSE TRAINING COURSE FOR DENTISTS AT FCDA STAFF COLLEGE, OLNEY, MARYLAND, July 21-23, 1954

A special three-day course for dentists will be given July 21-23, 1954, inclusive, at the FCDA Staff College in Olney, Maryland.

This course for dentists is part of the FCDA training program for services vital to the civil defense sphere of national defense. Dentists are expected to give valuable auxiliary medical service in a major disaster inasmuch as the number of available physicians and nurses would be far too few to provide even emergency medical relief. This new course will afford dentists an opportunity to become familiar with the scope and nature of the civil defense home-front preparedness program and the role they will be called on to play.

The course will consist of lectures and demonstrations on orientation, organization and training, analysis of problems, tactical operations, and special dental relationships to civil defense. The effects of atomic and chemical warfare will be graphically presented. The class will also observe the actual training of rescue and firefighting services.

There is no charge for tuition. A charge of five dollars per day will be made to cover expense of board and room. Comfortable living quarters and meals are provided for the class members only, on the college grounds which are about 20 miles from Washington, D. C.

Application should be made promptly, as the number to be admitted to this first class is limited. The deadline for such applications is July 1. Applications should be sent in promptly to the Civil Defense Staff College, Olney, Maryland.

EMOTIONAL FACTORS MAY CONTRIBUTE TO EAR DISORDER

Emotional upsets may contribute to a form of deafness known as otosclerosis, according to Dr. Edmund P. Fowler, New York.

Writing in the January 23, 1954, Journal of the American Medical Association, Dr. Fowler stated that he has found the incidence of the disease—a formation of bone in the inner ear that results in deafness—to be greater in emotionally sensitive or unstable persons predisposed to the disease than in more emotionally stable ones.

"In otosclerosis the onset of deafness and its periods of rapid increase appear to coincide in time with, or more commonly subsequent to, puberty, childbearing, the onset of the menopause, severe illness, psychic traumas, and stress and anxiety, all of which are accompanied by major autonomic nervous system readjustments or dislocations," Dr. Fowler said.

HOUSEWIVES MOST PRONE TO SKIN DISEASES OF THE HANDS

Being "just a housewife" can be a dangerous occupation—one of the most dangerous, in fact, as far as skin disturbances of the hands are concerned.

Dermatitis of the hands gives rise to an immense amount of suffering and constitutes about nine per cent of the daily medical endeavor of a practicing dermatologist, it was stated by Dr. Richard L. Sutton, Jr., Kansas City, Mo., and Dr. Samuel Ayres, Jr., Los Angeles.

"The usual patient is a young matron, who must keep house, cook, wash dishes, do the laundry,

raise her children, and hold her husband; who can ill afford to sustain the misery of manual disability and whose occupation is inherently one of the most hazardous with which the dermatologist commonly has to deal," the doctors wrote in the current Archives of Dermatology and Syphilology.

Causes of inflammatory skin conditions of the hands are numerous, and to effect a cure it may be necessary to eliminate more than one condition, according to the doctors, who added:

"The skin as a whole is the dividing line between the person and his environment. It combines the features of a barrier, an adaptive mechanism, and a sensory organ—a great deal is asked of it, so to speak.

"The skin of the hands is exposed to the potentiality of diseases provoked by heat, cold, light, moisture, irritant chemicals, sensitizing chemicals, and pathogenic organisms to a degree over and above other skin. It is subject additionally to all the diseases of internal origin that skin is elsewhere, and the hands are especially subject, being special tactile organs, to psychosomatic disturbances."

There are many mechanisms provoking inflammatory skin disease of the hands, the doctors pointed out.

REHABILITATION CENTERS

The first authoritative manual of information on the nation's rehabilitation centers has been published by the National Society for Crippled Children and Adults, the Easter Seal Society, Lawrence J. Linck, executive director, announced.

"Rehabilitation Centers in the United States," one of the most useful recent publications in the field of service for the crippled, grew out of the First National Conference on Rehabilitation Centers jointly sponsored by the National Society and the Office of Vocational Rehabilitation of the U. S. Department of Health, Education, and Welfare.

The booklet was compiled by Henry Redkey, consultant on rehabilitation centers for the federal department.

TAKE BLOOD FROM SITTING DONOR, BLOOD BANK ADVISED

Two St. Louis blood experts have advanced the idea that it might be better for blood donors to give blood sitting up, rather than lying down as is usually done.

The suggestion was made in a paper delivered by R. O. Muether, M. D., and B. Koster, B. S., before the American Association of Blood Banks, at its sixth annual meeting in Chicago.

In a test involving 190 donors, 85 sat up and 105 lay down, Dr. Muether reported. Careful, repeated checks of blood pressure, pulse rate and incidence of reaction showed no appreciable difference, it was found. When questioned afterward, 54% of those who sat up and who had had previous bleedings lying down, said they preferred to sit up. Only 8% preferred lying down.

ADULT UNDERSTANDING OF CHILD ACCIDENT PROBLEMS NECESSARY

It's the adult's job to prevent childhood accidents.

As children do not always conform to the practices that would insure their greatest safety, adults must be made to understand the accident problem of children and must be as concerned about it as they are about childhood diseases, it was stated editorially in the January Journal of the American Medical Association.

"A notable decrease in infant mortality and in the death rate from childhood diseases has been brought about by the nation's physicians during the last half century," the editorial pointed out. "However, despite the efforts put forth by the medical profession to protect the country's future citizens, childhood mortality continues high because of accidents—accidents that, for the most part, are preventable.

"The accident death rate among children is being reduced only about one-third as fast as the rate for death by disease. Preventable accidents are the leading causes of death in the age group of 1 to 14 years, killing more children than the combined mortality of the next six causes of death—pneumonia, congenital defects, cancer, tuberculosis, leukemia, and heart disease—and killing many, many more children than poliomyelitis."

CARE AND PLANNING CAN SALVAGE RETIREMENT PRODUCTIVITY WASTE

With greater care and planning, much valuable productivity that now is being wasted by compulsory retirement can be salvaged, it was stated editorially in the current (January 16) Journal of the American Medical Association. Older workers who are capable of and desire employment should be permitted to work, it added.

As firms take great pains to choose whom they will hire, there is no reason why they should not concern themselves equally with the problems of whom they will retire, the editorial said. Retirement policies, in addition to setting the conditions of retirement, should state how older workers may be profitably kept on the job and how their status is to be determined.

The best way to determine who should be retired, according to the editorial, is for a firm to create a panel to judge each case on its merits and determine whether the worker should continue in his present status, go on a modified schedule, transfer to a less demanding job, or be

retired. The panel, which should include one or more high level executives and an industrial physician, should seek advice, when necessary, from the employee's immediate supervisor, the company's personnel director, or the local union. Restudying of methods of work and a restudying of training methods also will aid in the solution of the problem, it was added.

WOMAN'S AUXILIARY TO THE LOUISIANA STATE MEDICAL SOCIETY

JEFFERSON DAVIS PARISH

Women's Auxiliary to the Jefferson Davis Parish Medical Society have just completed one of the most active years ever experienced by them under the able leadership of their president, Mrs. L. E. Shirley, Jr. At their first meeting in October, a member gave an interesting and informative talk on Oveta Culp Hobby, the head of our recently created national Department of Health, Welfare and Education, dwelling especially on the amazing number of things "Mrs. Secretary" has accomplished, her rare talent for administration, and the heavy responsibilities she now carries.

In November, the auxiliary was honored by a visit from the State president, Mrs. Edwin A. Socola, who told the members present of the aims and objects of the state and national auxiliaries. Mrs. Socola was entertained at a luncheon.

In December, the members had a guest speaker who spoke on an article by Elsie King Morland, entitled the "Big Blame".

In January, a member gave a splendid paper on "The Doctor Prescribes Music", telling of the use of music in hospitals, and describing the various kinds of music used and its effects on patients.

In February, Mrs. Gladys Robinson of Welsh, district director of civil defense, and Mr. A. T. Sanders, one of the state directors, spoke to the group on "Civil Defense". Movies were shown.

In March, "Medico-legal Problems" was presented to the auxiliary by their District Attorney.

At the April meeting the Senior and Junior girls from the Jennings and Welsh high schools were honored at a tea. Miss Clare M. H. Wangen, Dean of the College of Nursing at Southwestern Louisiana Institute, spoke on nurse recruitment.

At the May meeting, copies of pictures made by famous artists, depicting scenes from World War II were shown and discussed. These pictures are copies of the "Abbott Collection" which toured the country recently.

RAPIDES PARISH

Mrs. Edwin A. Socola, state president, was key speaker at the Founders Day luncheon of the Woman's Auxiliary to the Rapides Parish Medical Society held recently in Alexandria.

On March 27, the auxiliary entertained at a costume party in observance of "Doctor's Day". The event was held at the Alexandria Golf Country Club, Mrs. Chester Fresh was chairman in charge of arrangements. At the auxiliary's regular March meeting, Mrs. Dewitt Milam of Monroe, was guest speaker and had as her topic "Romance and Research in Medicine". Mrs. Milam is fourth vice-president of the Woman's Auxiliary to the American Medical Society and a past president of the Louisiana State Medical Society Auxiliary.

At the April Meeting of the Rapides Parish Medical Society's Auxiliary Mrs. M. S. Freiman was elected President. Other officers elected were Mrs. J. T. Willis, president-elect; Mrs. P. M. Davis, Jr., recording secretary; Mrs. D. D. Salmon, corresponding secretary; Mrs. D. M. Kingsley, treasurer; Mrs. Clarence Pierson, historian, and Mrs. Milton Hinigman, parliamentarian. The election was held following a report by Mrs. Henry C. Gahagan, chairman of the nominating committee. Installation of officers will take place in May.

OUCHITA PARISH

At a recent meeting of the Woman's Auxiliary to the Ouachita Parish Medical Society, Mrs. Najeeb Klam, presiding, a very interesting talk on "Socialized Medicine — The Picture Today" was given by Mrs. C. U. Johnson. Reports were given by the following committee chairman: Bulletin, Mrs. F. E. Polen; Education and Today's Health, Mrs. D. L. Anderson; Civil Defense and Safety, Mrs. C. B. Flinn; Nurses Scholarship Fund, Mrs. Ralph Talbot, and Community Service, Mrs. Harrell Webster. At the March meeting of the auxiliary, Mrs. Cyril T. Yancey, chairman of the Essay committee, introduced and presented prizes to the three essay contest winners. All three winners are students at Ouachita Parish High School. They are Miss Robbin Wiggins, winner of the first prize, F. H. Reagan, Jr., second prize winner and Miss Elaine Williams, third place winner. Also on the program was Dr. Jack T. Jackson who discussed the Chiropractic Bill which is to be voted on in the next session of the Louisiana legislature. Mr. R. C. White, Jr., talked on the Red Cross and told how it helped him personally while he was a prisoner of war. Following his talk, a very informative and interesting film on the Red Cross and its activities was shown by Mrs. Kenneth L. Weldin of the Red Cross. On March 30, Ouachita Parish Medical Society Auxiliary celebrated "Doctor's Day" in cooperation with other groups throughout the nation. The members en-

tertained the doctors at a semiformal buffet supper at the Country Club. It was brought out that there are 103 doctors in the parish organization. Of these 46 are general practitioners; 12 are surgeons; and 28 are specialists. Also there are 15 resident physicians at Charity hospital and two public health doctors.

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ORLEANS PARISH

Woman's Auxiliary to the Orleans Parish Medical Society, in celebration of the 20th observance of Doctor's Day, held open house at eight p.m. at the Orleans Club, March 30. Featured on the program was the presentation of an auxiliary donation by Mrs. Phillips Carter, Doctor's Day chairman, in honor of the members of the Orleans Parish Medical Society. Dr. J. O. Weilbaecher, Jr., received this donation which is given to the American Medical Association Education Foundation Fund, designating the Schools of Medicine of Louisiana State University and Tulane University as recipients. The highlight of the evening was the viewing of a hobby exhibit by members of the Orleans Parish Medical Society. Dr. Branch Aymond was in charge of arrangements.

The winners of the eighth annual National Essay Contest for Junior and Senior High School students were announced at the meeting in April. The contest is sponsored by the Association of American Physicians and Surgeons with the cooperation of county and state medical societies. Mrs. Lloyd J. Kuhn was contest chairman and Mrs. Mannie Mallowitz, co-chairman. The subject for the essay was "Why the Private Practice of Medicine Furnishes this Country with the Finest Medical Care". First place winner in the Senior High School Group was James Wesner of Fortier High. Second place winner was Jules Harris of Holy Cross. Third place went to Mary Arnold of Holy Name of Jesus, and fourth place to Rodney Rue of Fortier High. Miss Loretta Babst was first place winner in the Junior High group. She is a student at Ursuline. Lynne Welsch, McMain High, was second place winner. Third place went to Mary Ann Terranova of Peters High School, and fourth place to Helen Kerr of McMain High.

The students were presented by Mrs. Morgan J. Lyons, Dr. Edwin Zander made the presentation of awards. Mrs. Mannie Mallowitz introduced the contest judges who were Mrs. Alberto Prieto, Miss Henrietta Keitz, Mrs. H. Leon Mintz, Miss Carrie Spurgeon, Mrs. Garland Taylor, Judge Walter Hamlin, Dr. Daniel J. Murphy, and Dr. J. Morgan Lyons. Schools participating and their auxiliary sponsors were as follows: Fortier High, Mrs. Monte Meyer; Warren Easton, Mrs. Frank Oser; Sacred Heart, Mrs. Joseph L. Treadway; Jesuit, Mrs. Phillips Carter; Redemptorist, Mrs. Joseph M. Hountha; McDonogh High, Mrs. John Dunn; Samuel Peters, Mrs. Nicola J. Tessitore; McMain, Mrs. Charles Robinson; St. Joseph Academy, Mrs. Vincent Blandino; Holy Name of Jesus, Mrs. Martin O. Miller; Holy Cross, Mrs. Percy Phillips; Behrman, Mrs. Carroll Gelbke; Ursuline, Mrs. J. Morgan Lyons; and Capdau, Mrs. Spencer B. McNair. First Place winners will compete in the National contest.

Woman's Auxiliary to the Orleans Parish Medical Society celebrated its 25th anniversary at a birthday party held at the Orleans Club, April 14. Mrs. Joseph E. Brierre introduced all the living past presidents. The past-presidents were: Mmes. J. A. Storck, S. M. Blackshear, Isadore Cohn, Francis E. LeJeune, S. Chaille Jamison, Rogers Brewster, W. P. Gardner, Jules Myron Davidson, C. Grenes Cole, Aynaud F. Hebert, James W. Warren, Paul G. LaCroix, C. L. Peacock, John S. Dunn, H. Theodore Simon, Carroll F. Gelbke, Joseph S. D'Antoni, Anees Mogabgab, Edwin S. Socola, Boni deLaureal, John Sanders, Louis Leggie, and Mrs. Edwin R. Guidry, who is now president. A talk on "State Legislation" was given by Mrs. Arthur D. Long, of Baton Rouge.

Presiding at the punch bowls were: Mmes. Spencer McNair, John L. Dileo, William Kohlman, George M. Haik, Vincent Blandino, J. M. Hountha, Monte Meyer, and Harry Morris.

Assisting in the dining room were Mmes: Robert F. Sharp, William B. Clark, Adrian B. Cairns, Philip Boudreaux, Luis R. Oms, Joseph H. Allen, J. W. Warren, Merrill C. Beck, Martin T. Van Studdiford, John B. Gooch, Bruno F. Mancuso, T. A. Soniat, Abe Golden, John H. Dent, R. L. Simmons, Frank G. Nix, William A. Roy, Albert Habeeb, J. D. Russ, Jerome E. Landry, and Daniel C. Riordan.

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BOOK REVIEWS

The Calculation of Industrial Disabilities of the Extremities, by Carl O. Rice, Springfield, Illinois, Charles C. Thomas, 1952, Pp. 289, Price $10.50.

This system of evaluating residual disability of the extremities is based entirely on residual joint motion. It has the advantages of simplicity, reliability and a wide scope of applicability. It does have disadvantages in that it does not take into consideration the factors of pain, weakness, and sensory loss and does not take into consideration the type of employment in which the client or patient is involved.

It has been most valuable in the guide or basis for establishing relative disability. It appears that it would be most useful for a physician who makes

only an occasional estimate of disability.

The author has attempted to establish the relative values of the various joints in an extremity in relation to the extremity as a whole and to the body as a whole. Its illustrations are simple, easily understood and anatomically correct. It should prove of value to all who are called upon to perform evaluations of industrial disabilities following injuries.

JACK WICKSTROM, M. D.

Diagnostic and Experimental Methods in Tuberculosis; by Henry Stuart Willis M. A., M. D., F. A. C. P. and Martin Marc Cummings, M. D. F. C. C. P. Springfield, Illinois, Charles C. Thomas, 1952, pp. 394, 43 illustrations, 501 references, $10.00.

This is the second edition of a very useful compilation of methods of value in the diagnosis of tuberculosis. Divided into three sections (Laboratory Diagnosis, Related Clinical and Laboratory Methods, and Some Methods of Value in the Study of Tuberculosis Experimentally Produced), it presents the great majority of those technical procedures which will greatly assist in establishing the tuberculous etiology of a given malady. Throughout the book, the authors endeavor to point out the clinical usefulness of the various procedures and to indicate that one cannot throw the full weight of diagnosis upon the chest roentgenogram.

Doctors Willis and Cummings have done the profession a great service in collating all this material. Because of the diverse appearances of the tubercle bacillus in practically every organ of the body, much of the less commonly employed diagnostic methods are described in specialized tomes devoted to orthopedics, dermatology, neurology, etc. The physician who must frequently diagnose tuberculosis by laboratory methods and the practitioner who only occasionally must resort to this type of study will both find this a very convenient and handy reference volume. The language is simple, the illustrations pertinent and the arrangement logical. *Diagnostic and Experimental Methods* will unquestionably fill a great need in many laboratories.

SYDNEY JACOBS, M. D.

Retinal Circulation in Man and Animals; by I. C. Michaelson, Charles C. Thomas, Springfield, Illinois, 1954 pp. 146, 95 ills., Price $6.75.

A monograph in book form of 146 pages, 95 illustrations and numerous tables. Five phyla of animals are discussed in sole detail regarding embryology, morphology, and physiology of their retinal circulation. Several mammalian animals, especially man, are described. The author freely refers to previous authorities for much information which he himself has not obtained. However, his opinion of anatomical relationships was obtained from flat retinal preparations made by India ink injections. Microscopic sections were also used.

Although much of the material is not original, and with most species, large numbers of animals are not used, the preparations pictured are quite convincing as to the true coursing of the retinal vessels. Photographs and photomicrographs of the actual material used lend authority to the fine detail and careful preparation in this work.

The publishers should be congratulated in lending their support to a work of such basic nature, and issuing it in their usual excellent binding and layout.

J. WILLIAM ROSENTHAL, M. D.

Electrocardiography in Practice; By A. Graybiel, P. D. White, L. Wheeler, C. Williams, W. B. Saunders Co., Philadelphia, 1952.

The authors point out in their preface that this third edition is still primarily an atlas of electrocardiograms for the medical practitioner. Sections are devoted to illustrating the variations in the normal, disorders of rhythm and conduction, changes produced by drugs and chemical agents, and electrocardiographic "patterns" such as specific chamber enlargement, pericarditis, etc. The longest portion in the book is given to records from patients with various etiologic types of heart disease. This is followed by a short collection of "unknowns."

By including the historical summary of the development of physiologic concepts in clinical electrocardiography the atlas has acquired some of the characteristics of a textbook. Minor objections might be raised to the assertion that the Q-T (rather than Q-U) interval is prolonged in hypopotassemia (Figs. 253 and 263) and the use of "myocardial scarring" as an electrocardiographic term (Fig. 271) but the otherwise careful wording of the text emphasizes the individuality of each tracing and the nonspecificity of patterns found under the etiologic types and should thus help avoid the fallacy of matching tracings with the book. The greatest value of the atlas will probably be as a supplement to more complete texts, thus enabling the beginning student of electrocardiography to acquire quickly some of the historical background and to practice reading a variety of well-reproduced tracings in the absence of an extensive practice file.

LEO G. HORAN, M. D.

Amebiasis[1] a "Poorly Reported" Disease

Until serious complications arise, amebiasis may pass unrecognized and patients receive only symptomatic treatment.

Although amebiasis is a disease with serious morbidity and mortality, statistics on its incidence[1] are incomplete because its manifestations are not commonly recognized and consequently not reported.

"*Vague symptoms[2] referable to the gastrointestinal tract, such as indigestion or indefinite abdominal pains, with or without abnormally formed stools, may result from intestinal amebiasis. Not infrequently in cases in which such symptoms are ascribed to psychoneurosis after extensive x-ray studies have been carried out, complete relief is obtained with antiamebic therapy.*"

To prevent possible development of an incapacitating or even fatal illness and to eliminate a reservoir of infection in the community, diagnosing and treating[3] even seemingly healthy "carriers" and those having mild symptoms of amebiasis is advised.

Early diagnosis[1] is important because infection can be rapidly and completely cleared, with the proper choice of drugs and due consideration for the principles of therapy. For treatment of the bowel phase these authors find Diodoquin "most satisfactory."

For chronic amebic infections, Goodwin[4] finds Diodoquin to be one of the best drugs at present available.

Diodoquin, which does not inconvenience the patient or interfere with his normal activities, may be used in the treatment of acute or latent forms of amebiasis. If extraintestinal lesions require the use of emetine, Diodoquin may be administered concurrently. It is a well tolerated and relatively nontoxic orally administered amebacide, containing 63.9 per cent of iodine.

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Endamoeba histolytica (*trophozoite*).

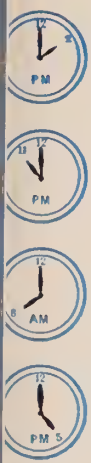
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2. Goldman, M. J.: Less Commonly Recognized Clinical Features of Amebiasis, California Med. *76*:266 (April) 1952.

3. Weingarten, M., and Herzig, W. F.: The Clinical Manifestations of Chronic Amebiasis, Rev. Gastroenterol. *20*:667 (Sept.) 1953.

4. Goodwin, L. G.: Review Article: The Chemotherapy of Tropical Disease: Part 1. Protozoal Infections, J. Pharm. & Pharmacol. *4*:153 (March) 1952.


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English, A. R., et al.: Antibiotics Annual (1953-1954), New York, Medical Encyclopedia, Inc., 1953, p. 70.

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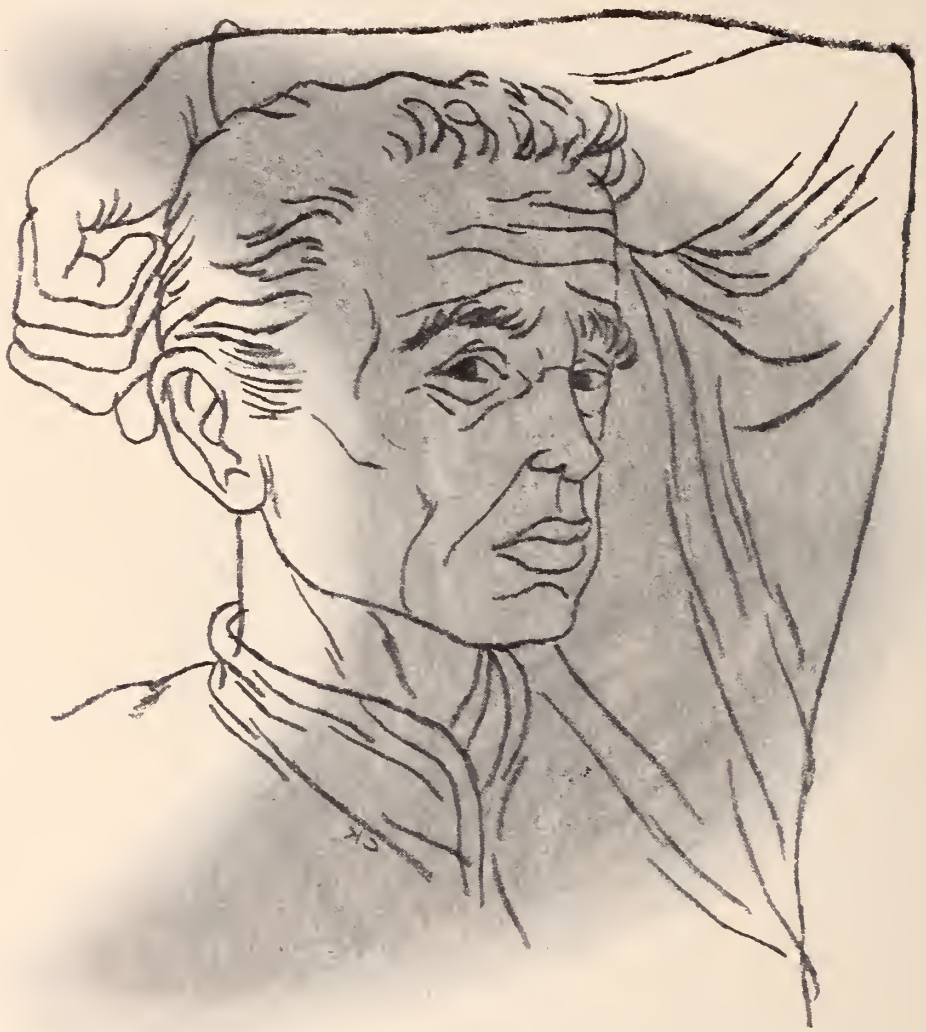
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1. Gurdjian, E. S., and Webster, J. E., Amer. J. of Surgery, 63:236, 1944.

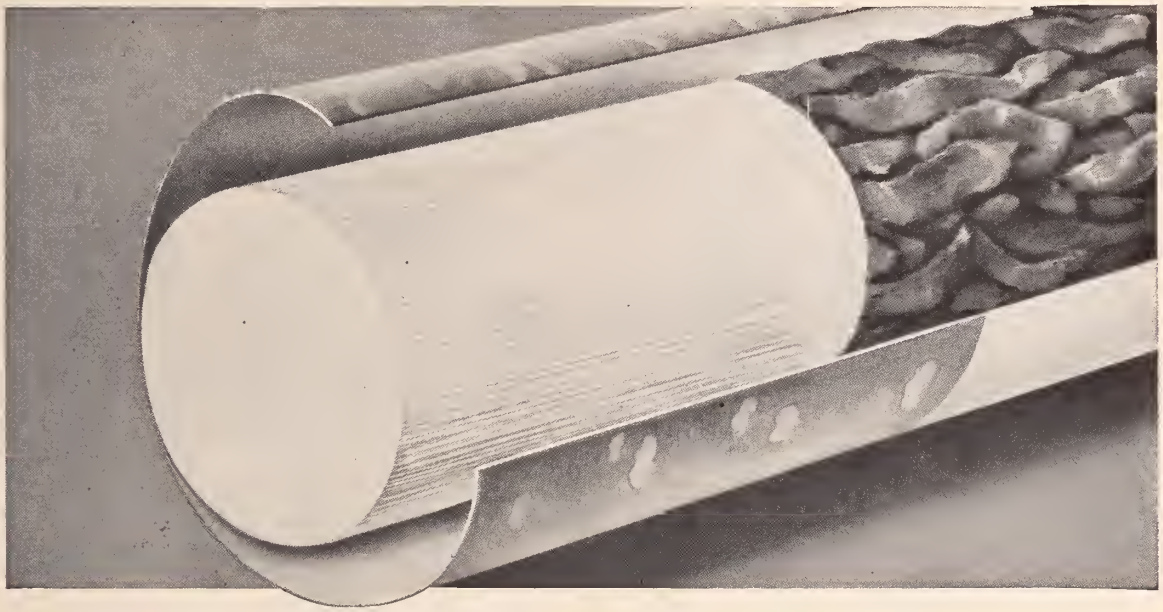
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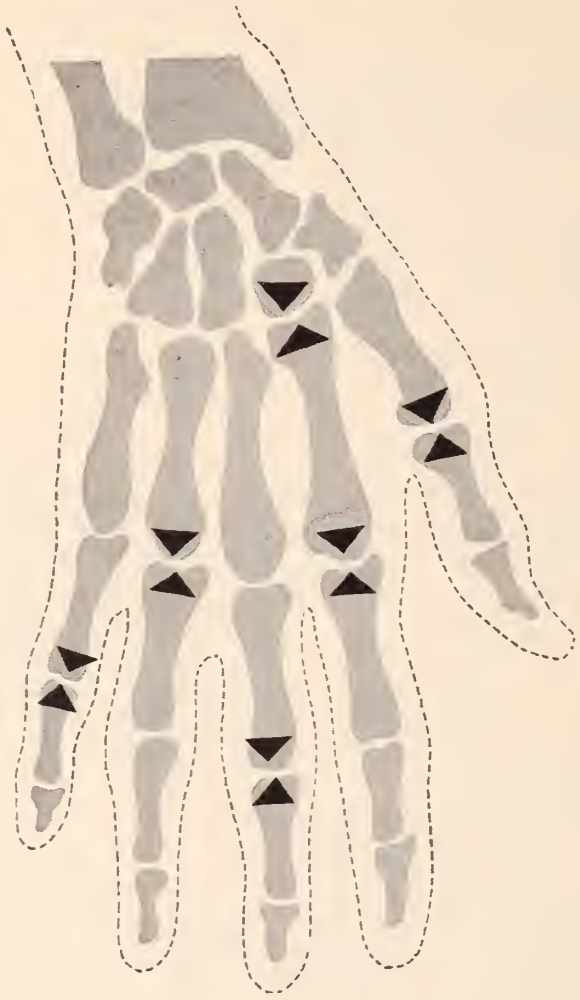


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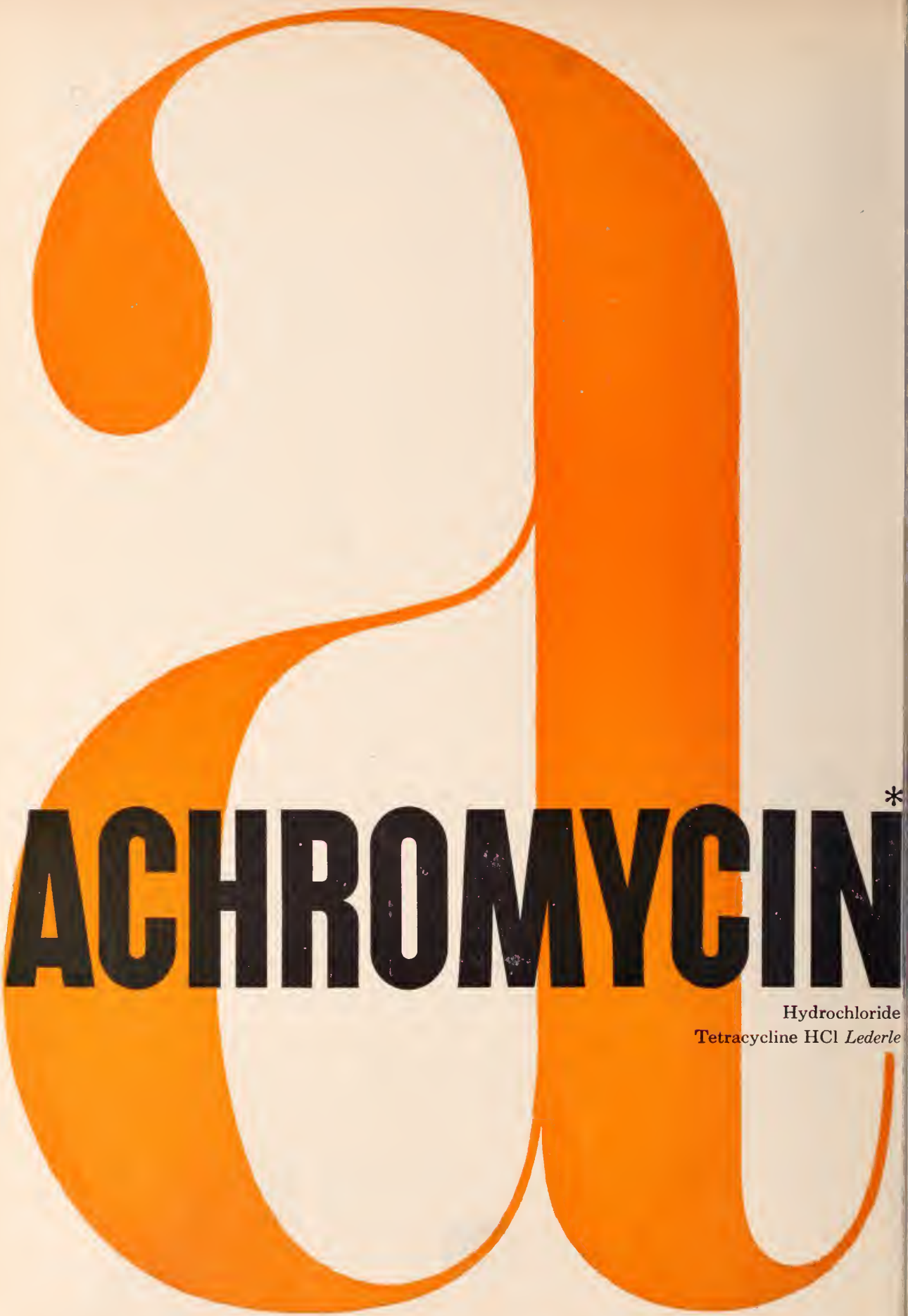
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1. Malleson, J.: Lancet 2:158 (July 25) 1953. 2. Goldzieher, M. A., and Goldzieher, J. W.: Endocrine Treatment in General Practice, New York, Springer Publishing Company, Inc. 1953, p. 23.

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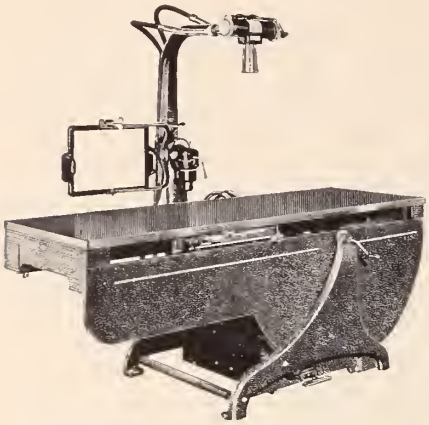


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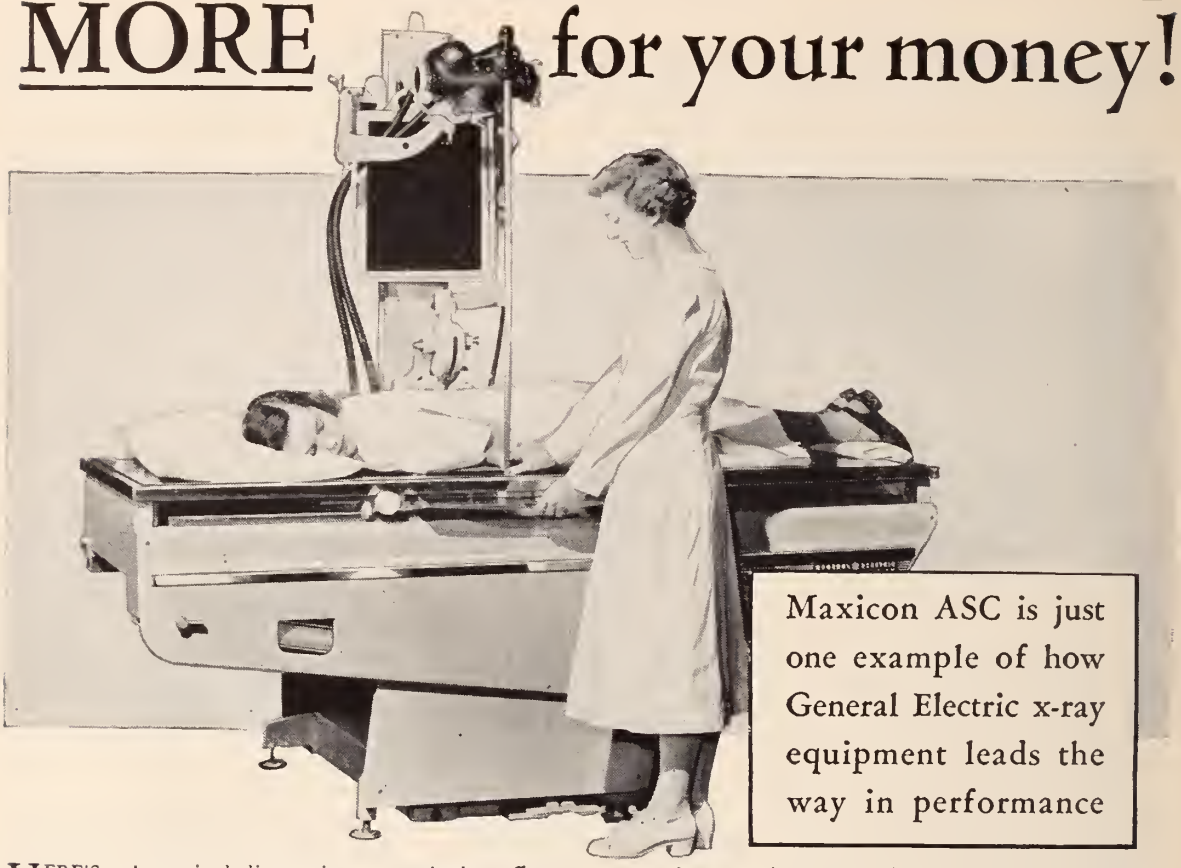
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Total attendance for the seven cities—Boston, New York, Philadelphia, Pittsburgh, Toledo, Detroit and Dearborn—for the first half of the series was between 19,000 and 20,000.



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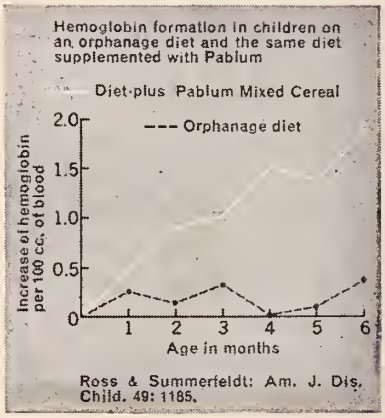
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1. Smith, N. J., and Rosello, S.: J. Clin. Nutrition 1: 275, 1953;
2. Jeans, P. C., in A.M.A. Handbook of Nutrition, ed. 2, New York, Blakiston, 1951, p. 280.

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JULY, 1954

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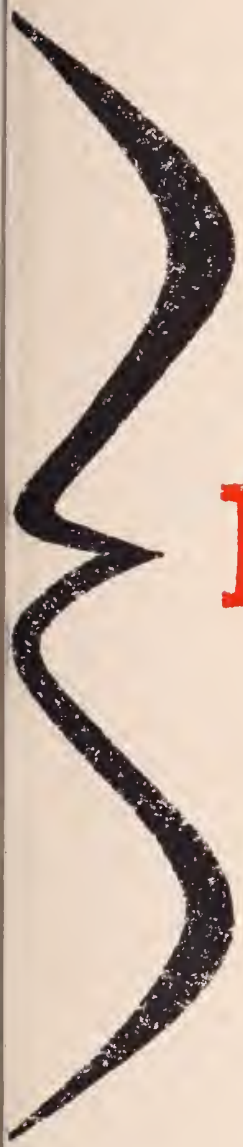
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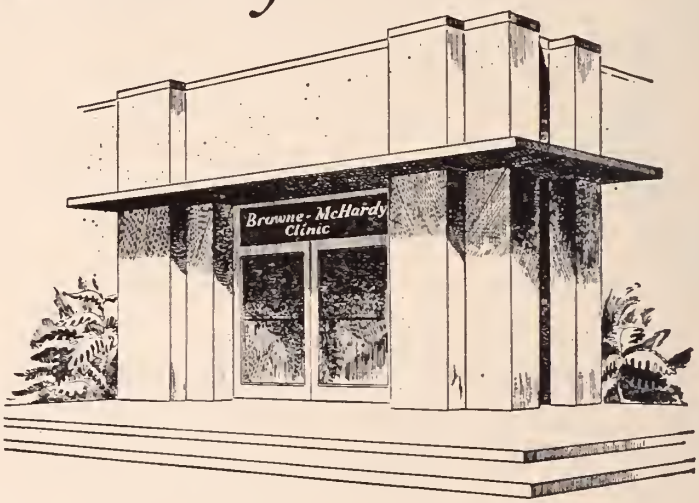
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*Kirsner, J. B.; Brandt, M. B., and Sheffner, A. L.: Diet and Amino Acid Utilization in Gastrointestinal Disorders, J. Am. Dietet. A. *29*:1103 (Nov.) 1953.

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1. Cook, M. H.; Free, A. H., and Giordano, A. S.: Am. J. M. Technol. *19*:283, 1953.
2. Gray, C. H., and Millar, H. R.: Brit. M. J. *4824*:1361 (June 20) 1953.

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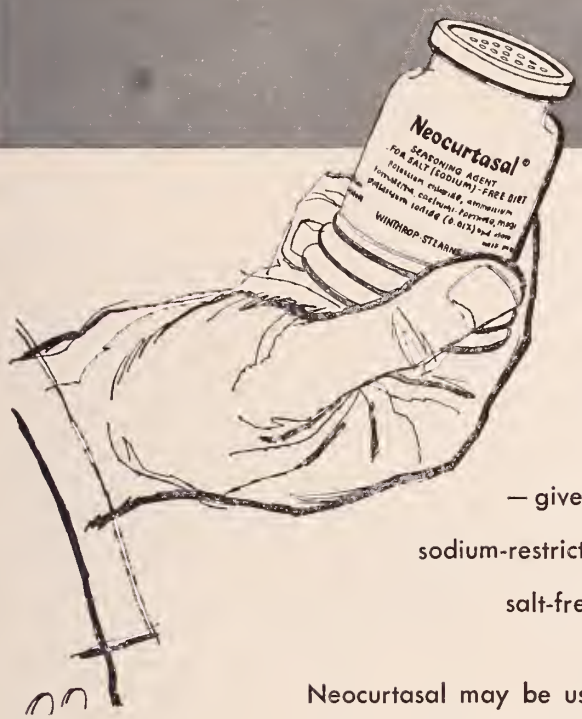
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1. Heller, E. M.: The Treatment of Essential Hypertension. *Canad. Med. Assn. Jour.*, 61:293, Sept., 1949.

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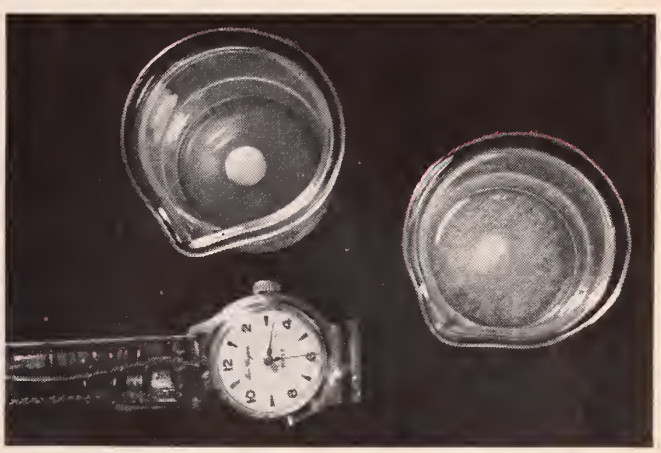
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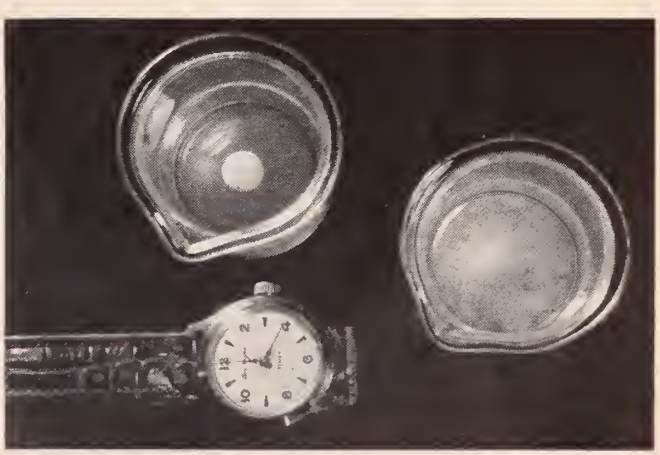
3:20—Five minutes later, *Filmtab** coating has already started to disintegrate. The tissue-thin film actually begins to dissolve within 30 seconds after patient swallows tablet.



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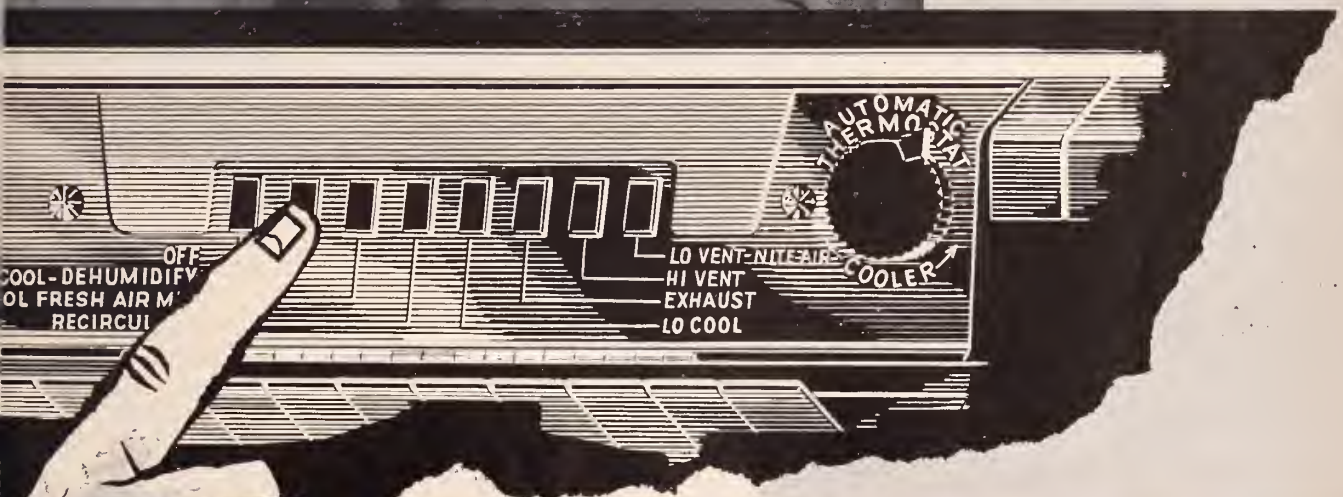
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THE ADMINISTRATION'S FIVE POINT HEALTH PROGRAM *

WALTER B. MARTIN, M. D. †
NORFOLK, VIRGINIA

On the 18th of January, the President sent to the Congress his recommendations in the field of health. These were five in number and were concerned with strengthening the research program of the Public Health Service, changes in the formula for grants-in-aid in the health field, further extension of the Federal-State Rehabilitation Program, and amendments to the Hospital Survey and Construction Act of 1946, to provide for construction of chronic disease units, nursing and convalescent homes, diagnostic or treatment centers, and rehabilitation facilities. He further recommended the establishment of a Federal reinsurance service to "encourage private and non-private health insurance organizations to offer broader health protection to more families." He also emphasized that "the best way for most people to provide themselves with the resources to purchase good medical care is to participate in voluntary health insurance plans." This recognition of the principle of voluntary prepayment of the cost of health care has been most gratifying to all of those who have labored for many years in this field.

The American Medical Association acting through its Board of Trustees approved in principle all but the reinsurance proposal, shortly following the President's message. They felt at that time and until a specific bill covering the subject of reinsurance was submitted to the Congress that any action approving or disapproving Federal reinsurance should be deferred.

Since bills now have been introduced into the Senate or the House of Representatives covering the several aspects of the President's proposals, brief comments will be made in reference to the most important of them and a more detailed analysis of the proposed reinsurance plan will be undertaken.

RESEARCH PROGRAM

The first of the President's recommendations concerned the strengthening of the Public Health Service's research program. While we have presented no specific objection to this recommendation, there should be an appraisal of the multiple research activities in the Federal government from the standpoint of economy and of preventing wasteful overlapping and duplication. The total cost of all of these projects should be known and their relative value in reference to the cost.

The second recommendation was in reference to the establishment of a Federal Reinsurance Service and will be discussed later.

HOSPITAL BUILDING PROGRAM

H. R. 8149 and S-2748 have to do with amendments to the Hospital Survey and Construction Act of 1947 and are intended to implement plans for treatment and diagnostic centers, chronic disease hospitals and nursing homes. A clear definition of what constitutes a treatment and diagnostic center should be a part of the bill. The provision in the original Hill-Burton Act whereby a state authority making a

* Presented at the Seventy-fourth Annual Meeting of the Louisiana State Medical Society, May 20, 1954, in New Orleans.

† President, American Medical Association.

survey would determine priority of need, location, and type of facility necessary to develop a well rounded system in each state should be included in the present bill. We also believe, and have so advised the Congress that chronic disease and convalescent hospitals should be set up as part of or contiguous to existing hospitals. A chronic case may become acute and may require general hospital care not available in a chronic disease institution. Patients should be easily transferrable, back and forth, between the chronic division and the more active part of a conventional hospital.

REHABILITATION AND VOCATIONAL TRAINING

The fourth recommendation was for a substantial increase in the Federal-State program for rehabilitation and vocational training. Senate bill 2759 proposes to amend the present Vocational Rehabilitation Act to carry out the purpose of this recommendation. While we are in sympathy with the purpose of the act, we have taken no vigorous action for or against this bill.

EXTENSION OF PUBLIC HEALTH SERVICES

The purpose of the fifth recommendation as expressed in Senate Bill 2778 is to amend section 314 of the Public Health Service Act so as to extend and improve public health services and provide for better use of public health service funds. At present, specific grants are made for a list of diseases such as venereal disease, tuberculosis, cancer, heart disease, and mental disease, and for public health services generally. The bill proposes the elimination of these specific grants and the substitution of three types of grants. One of these is for general public health purposes. One is for extension and improvement of public health service, and the third for so-called "unique projects." In the last two categories there is no provision for consultation with state health authorities or with an advisory committee. While we approve the purpose of this bill, we see no reason for separation of grants one and two, and we feel that consultation with the state health authorities is an essential part of a well working program. We feel that the section dealing with "unique projects" should be clarified. The Surgeon-general is given complete authority in this field without benefit of consultation with either the state health agencies or a national advisory council. This bill provides that type 3 grants may be made to non-governmental and non-profit organizations and agencies. More specific definition should be given as to such non-governmental agencies. In view of the fact that the commission on intergovernmental relations was created by the 83rd Congress, it seems desirable to await a report of this commission before new legislation, not of an emergency nature, providing Federal grants-in-aids to the states be adopted.

REINSURANCE OF HEALTH INSURANCE PLANS

The Senate Bill 3114 and its companion bill in the House 6356, the so-called reinsurance bills have stimulated a great deal of interest and have provoked considerable controversy. These bills propose to establish a Federal Corporation with a capital stock of 25 million dollars for the purpose of reinsuring certain health insurance plans operated by a commercial or non-profit insurance carrier. The first section of the bill provides for a technical and advisory service in the insurance field. The Department of Health, Education and Welfare is authorized to collect data from all sources concerning morbidity and mortality rates and other significant factual information. This section also provides for a study of organizational procedures and structure, and the distribution of technical advice and information without charge to agencies engaged in providing insurance against the cost of health services. A separate appropriation would be set up for this activity.

The second section of the bill proposes to establish a Federal Reinsurance Corporation with a 25 million dollars operating capital. This corporation would undertake to insure, not companies, but particular plans acceptable to the Secretary, and at a fee fixed by the Secretary. This would probably be on the basis of a percentage

of gross premiums collected by the company. An allowance of one-eighth of the total gross premiums would be set up for overhead and operational expenses. Seventy-five percent of the losses, if any, incurred by a company under a particular contract would be covered by the corporation.

All responsibility for administration of the act lies in the Secretary of Health, Education, and Welfare. A National Advisory Council consisting of 12 members appointed by the Secretary and with the Chairman appointed by the Secretary is provided in the bill. The council is merely an advisory one. The Secretary is authorized to utilize such state agencies as are empowered by law to supervise insurance carriers. However, requirements and standards are prescribed by the Secretary. The Secretary, after reviewing any proposed plan will fix the reinsurance premium rate at a level necessary to secure the objective of the act. These premiums will be fixed separately for each plan. The renewals will be made on an annual basis. The premium rate will be subject to change on the basis of experience in a preceding year. The bill contains a "no competition" provision. It is not entirely clear as to just how this would be administered. It is stated, "that if in the Secretary's judgment, reinsurance by nongovernmental agencies for a plan is available on the terms and conditions, and at a premium rate comparable to those offered under the act and to an extent that would be adequate to promote the purpose of the act, such plans would not be insured by the Federal Reinsurance Corporation."

There are a number of other provisions concerning the legal status of the carrier, financial soundness, reports required, and certification by the state insurance departments. It is obvious that the Secretary has quite broad powers and has the authority to prescribe such regulations as may be deemed necessary to carry out the purpose of the act. This purpose is to extend prepayment insurance to the geographical areas not fully covered, to classes of individuals not now fully protected and to make the total over-all protections more extensive or more adequate.

The law further provides that the Secretary can prescribe the minimum benefit, limitation or exclusion because of preexisting conditions or specific illnesses, the maximum liability, waiting periods, duration, cancelability and renewability. There are numerous other provisions of this type that are within the authority of the Secretary to prescribe.

Before considering this program it might be well to first take a look at the present status of health insurance. Voluntary prepayment insurance against the cost of hospital care began in the middle thirties. Fifteen years ago, in 1939, six million people carried some form of insurance against this hazard. At the present time 92 to 93 million people carry such insurance. In the meantime, progress has been made in insuring against the cost of surgical and medical care in hospitals. At the present, approximately 75 million people carry insurance against the cost of surgical treatment in hospitals and 35 million against the cost of medical care. All of these programs have been and still are growing rapidly. It is recognized that these various policies vary considerably in their completeness of coverage, nevertheless, the insurance idea has spread to a large percentage of the insurable population. On the basis of those that are insurable, approximately 72 per cent of the population is covered. The percentage of coverage in different states varies widely. In the industrialized states and the industrial centers, the coverage runs from 80 to 84 per cent of the total population. In the more rural states the percentage is much lower and may be in the range of 45 to 50 per cent. This is largely due to greater difficulty of applying the group principle to the rural population, and of bringing educational methods to bear.

It must be recognized, however, that a considerable percentage of the people in

this country because of financial factors, age, unemployment, permanent or temporary disability of fairly long standing, are not insurable. Unemployment figures do not give a true picture of insurability since on the average 60 per cent of the unemployed are unemployed for four weeks or less, and approximately 57 per cent of them have unemployment insurance. The group over sixty-five years of age, numbers over 13 million, the temporarily disabled are over 4½ million, 60 per cent of whom are disabled for more than thirty days. The public assistance group approximates 5½ million, 47 per cent of whom are among the aged. There remains the low income group who so far have been either unwilling or unable to purchase prepayment protection. The experience of certain areas indicates that about half of this group are able to purchase insurance, but are unable to pay the cost of their illness at the time it occurs. The other half fall into the category of those whose income is so low that they cannot properly be expected to purchase prepayment protection.

The full significance of what has been accomplished already in the insurance field is not shown by a comparison of total hospital and medical costs with the percentage of coverage that now prevails. One of the principal effects of insurance has been a leveling process that takes off the peak of medical expense and fills in the valley by averaging the over-all costs. For example, the average cost for hospital care per person hospitalized is $148.00. If insurance only accomplished the leveling process so that every one paid this average figure, there would be relatively little hardship. But insurance does more by paying a substantial proportion of the bill.

In addition, very encouraging progress has been made in the sale of major medical expense insurance or so-called catastrophic illness insurance. These plans are comparatively young, but already more than a million such policies have been written. The extraordinary expansion of prepayment voluntary health insurance during the past fifteen years, particularly during the past two or three years, gives us reason to believe that further expansion in the number covered and the extent of coverage will continue. There are approximately eight hundred insurance agencies engaged in selling health insurance in a highly competitive field. Further extensions will continue as rapidly as sound actuarial experience is acquired, and as more and more people are induced to give the purchase of health insurance its proper place in their budget.

Through the medium of the Federal Reinsurance Corporation, the Department of Health, Education, and Welfare proposes to broaden health insurance coverage by reducing exclusions, making benefits more comprehensive, reaching into the areas of catastrophic illness, increasing the number of hospital days allowed, elimination of certain age restrictions, covering a portion of the now uninsurable and by including in insurance the cost of providing early diagnosis and treatment of chronic disease. These are all admirable objectives, but can they be accomplished under the principles of insurance? One can not insure against death since it is certain, but one can insure against the unpredictable factor of when death will occur or what will cause it. I could buy very cheaply at my age insurance against death or crippling from polio, but insurance against death or disability from a long list of the diseases common in my age group, such as cancer, heart trouble, diabetes, arteriosclerosis, and paralysis would be extremely expensive. Reinsurance will not make insurance any cheaper. In fact, while it makes it more dependable, it increases the cost, since the premium charge for reinsurance has to be added to the premium paid by the individual policyholder.

Under our present system there has been rapid progress in the direction of covering greater numbers, extending benefits and including a wider range of individuals who present a greater than aver-

age risk. This has come about through the general improvement in the health of our people, which is reflected in the accumulated actuarial data and by adoption of the principle of co-insurance and the deductable factor.

We have to recognize that there is a large group of medically uninsurable people. While this group is being whittled down and can be whittled down further, there is a hard core that remains. At the present, it is made up of a major fraction of the over 13 million aged, the totally disabled, and a portion of the temporarily disabled, the public assistance cases, a considerable number of the unemployed, and the indigent. The individuals in these groups are entitled to and should have access to good medical care. This care should be paid for by direct payment at the time that illness occurs. Those who are unable to pay for their own care are now being paid for by private philanthropy and by local and state governmental agencies. This is being well done in certain areas and poorly done in others. This factor, however, does not militate against the validity of this principle. It does mean that every possible effort should be made in every locality and in every state to improve this particular aspect of the medical care program. It is fallacious, however, to assume that any form of insurance can economically cover these groups. It can be done by compulsory national insurance so-called, but that method ceases to be insurance and becomes simply a Federal medical plan supported by taxed funds.

To attempt to insure the noninsurable group would be economically unsound and can only be accomplished by subsidy. Subsidized insurance would certainly impair and perhaps destroy voluntary insurance.

There are a number of grounds for a reasonable fear of the effect of the Federal government's entrance into the area of reinsurance of health insurance plans. I am sure that the proponents of this plan are sincere in their statements that there is no element of subsidy involved. I am not sure that they are wise enough or strong enough to keep it out. In fact, on a small scale, it is already in. The operating expenses of the Federal Reinsurance Corporation will come from general tax funds for a period of five years. It will be in competition with private and nonprofit agencies within this same field that pay their own operating costs. There is a larger danger, however, in that once the machinery is set up, there will be a popular demand for a subsidy, through this corporation, for insuring the low income group. Once this occurs, further progress upward on the economic scale of governmental subsidized insurance is a simple matter of lengthening the yardstick by which indigency is measured. The one check upon expansion of the plan is the provision that the Reinsurance Corporation will pay only 75 per cent of the losses of the plan. This will be a strong deterrent against plans being put forward that do not have a reasonably sound actuarial basis. If this deterrent works, the corporations will probably do little business and cease to be an important factor unless it moves into the field of subsidy.

The power granted the Secretary of Health, Education and Welfare, under this bill is rather extraordinary. An advisory committee and its chairman are appointed by the Secretary. It reports only to the Secretary and is responsible to the Secretary alone. The Secretary has the power to declare, when in his judgment, a private agency is performing a particular insurance function that will further the purposes of the bill. How this fits into the "no competition" statement in the bill is somewhat difficult to understand.

It has long been this nation's policy to leave to the states the supervision and control of insurance. Entrance of the Federal Government into this area may well be viewed with some misgivings. This is particularly true when subsidy becomes a part of the program, since an element of Federal control will surely follow Federal subsidy.

CONTROVERSIAL SURGICAL ISSUES IN THE MANAGEMENT OF PANCREATIC DISEASE *

WALTER F. BECKER, M. D.
NEW ORLEANS

Despite the encouraging progress that has been made in recent years in the difficult and relatively new field of pancreatic surgery, diseases of the pancreas continue to be the subject of much discussion and controversy. The divergence of opinion among surgeons concerning the various therapeutic procedures that have been advocated may be partially ascribed to the fact that surgical lesions of the pancreas are relatively so uncommon that it is almost impossible for the individual surgeon to accumulate sufficient personal experience to enable him to formulate conclusive policies based on that experience. Another factor which contributes to this relative infrequency of surgical attack on the pancreas is the existence of a justifiable temerity about operations on the pancreas, even in the minds of surgeons. The operative attack on pancreatic lesions is attended by more danger in terms of morbidity and mortality than most conditions and is technically more difficult in its anatomic and physiologic aspects. The deeply situated retroperitoneal position of the pancreas behind the lesser peritoneal sac at the level of the first and second lumbar vertebrae renders it less accessible to surgical approach than most abdominal organs. Its proximity to large blood vessels and other vital structures increases the technical difficulty of surgical therapy.

The purpose of this discussion is to consider briefly some of the controversial surgical issues in the management of pancreatic disease.

CONGENITAL ANOMALIES

The congenital anomalies of surgical importance are annular pancreas, ectopic pancreas and congenital cysts.

Embryologically the annular portion of the pancreas originates from two segments of pancreatic tissue which extend around the second portion of the duodenum, one passing anteriorly and the other posteriorly, and results from incomplete migration of the ventral anlage of the gland. Thus the proximal duodenum may be completely surrounded by a ring of pancreatic tissue which produces varying degrees of obstruction. Complete duodenal atresia exists in rare instances.

Annular pancreas is a rare condition, and in most instances it produces no symptoms and requires no treatment. If duodenal obstruction occurs duodenojejunostomy is the safest method of relieving it. Division or partial resection of the annular portion of the gland is unwise because of the possibility of injury to the main pancreatic duct and the development of pancreatic fistula, and also because the anomaly may be associated with duodenal atresia.

Ectopic or aberrant pancreatic tissue may occur almost anywhere within the peritoneal cavity. This lesion is much more common than annular pancreas, and most frequently occurs in the wall of the stomach, proximal small bowel, or even in Meckel's diverticulum.

The clinical significance of aberrant pancreatic tissue is dependent upon the location and size of the mass, the appearance of pathologic changes, and confusion with more serious lesions.[1] These ectopic pancreatic masses may be affected by a wide variety of pathologic conditions including pancreatitis, cyst formation, hemorrhage, abscesses, neoplasms, and even hyperfunctioning islet cell adenomas.

The symptomatic or incidentally discovered aberrant pancreatic tissue should be excised. Usually local excision of the ectopic mass will suffice. If the lesion is situated in the vicinity of the pylorus or proximal duodenum the true nature of the tumor frequently is not appreciated and subtotal gastrectomy is done.

* Presented at the Seventy-fourth Annual Meeting of the Louisiana State Medical Society, in New Orleans, May 21, 1954.

From the Department of Surgery, Louisiana State University School of Medicine, New Orleans, Louisiana.

PANCREATIC CYSTS

Pancreatic cysts may be treated by: (1) marsupialization or external drainage, (2) simple incision and drainage, (3) internal drainage, (4) excision, and (5) resection by distal pancreatectomy, or occasionally by pancreatoduodenectomy. The choice of an operative procedure will vary with the etiology and pathology of the cyst as well as with its size, location, duration and visceral relationships.

Congenital cysts and true retention cysts are lined with epithelium and usually are not densely adherent to surrounding viscera and large blood vessels, and in most instances can be safely excised. Neoplastic cysts such as cystadenoma and cystadenocarcinoma should be excised by partial or subtotal pancreatectomy. The majority of pancreatic cysts, however, are not true cysts but are pseudocysts or inflammatory cysts secondary to previous acute pancreatitis. The dense scarring and adherence of the cyst to adjacent viscera such as the stomach and transverse colon and such vital structures as the common bile duct, portal vein, hepatic artery and superior mesenteric vessels make excision technically impossible or extremely hazardous. Because of these difficulties and dangers it is generally agreed that most pseudocysts should be treated by external or internal drainage.

Marsupialization or external drainage involves incising the cyst wall, evacuating its contents and suturing the edges of the defect in the cyst wall up to the parietal peritoneum. The cystic cavity is then packed with gauze and over a period of weeks or months the walls of the cyst collapse and the cavity becomes obliterated. This method has the disadvantage that there is usually at least a temporary pancreatic fistula following external drainage, and in the occasional case the drainage continues indefinitely. However, if drainage persists, reoperation and excision of the fistulous tract is usually feasible.

Internal drainage involves anastomosing the cyst to a segment of the gastrointestinal tract, usually the jejunum. This method has certain obvious advantages. The chief objection to cystenterostomy is that intestinal contents may enter the cyst cavity and become entrapped there. Also there is the danger of mistakenly treating a cystadenocarcinoma in this manner.

Each method of treating pancreatic cysts is suitable under certain circumstances. There must be individualization in the choice of therapeutic procedures in dealing with these problems.

ISLET CELL ADENOMA

One of the most interesting surgical lesions of the pancreas is the hyperfunctioning islet cell adenoma. The surgeon tends to underestimate the difficulties which the internist faces in the diagnosis of hypoglycemia due to pancreatic adenoma; and the internist may fail to appreciate the magnitude of the technical problem frequently encountered by the surgeon responsible for the identification and extirpation of these tumors. Each tends to oversimplify the problem of the other. It is well to remember that the relationship of hypoglycemia to islet cell tumors is an inconstant one. It has been estimated that the incidence of islet cell adenoma is about 1 in 1000 autopsies, but clinical manifestations appear in only about 20 per cent of these.[2] Furthermore, diseases of the liver, adrenal, pituitary, and thyroid may occasionly result in hypoglycemia.

Surgical excision of the islet cell adenoma is the treatment of choice because it is a potentially fatal disease. Irreversible central nervous system damage may occur; and, of course, some patients die of hypoglycemic shock. Moreover, about 15 per cent of these adenomas are malignant.

Years ago Whipple[3] emphasized that a surgical search for an insulinoma is justifiable only when (1) the attacks of suspected hyperinsulinism occur during periods of fasting or after extreme exertion; (2) the blood sugar value during the attack or after 12 hours of fasting must be below 50 mg. per cent; and (3) the symptoms must be relieved promptly by the administration of glucose. If an ade-

noma is to be found in an acceptable percentage of laparotomies there must be strict adherence to these diagnostic criteria, and at the original operation the surgeon must carefully explore the entire pancreas and sites of localization of ectopic pancreatic tissue. These tumors may be very tiny; they are multiple in 10 per cent of the cases; and they are situated in aberrant pancreatic tissue in from 2 to 5 per cent of the cases.

The surgical results are reasonably satisfactory. About 400 cases of hypoglycemia due to pancreatic adenoma have been reported in the literature,[4] but only one-half of these were operated upon. In about 45 per cent of the patients explored, no tumor was found. In more than one-half of these cases in which the surgeon did not find the tumor but proceeded with a subtotal pancreatectomy, the resected specimen was histologically normal. Of those patients having subtotal pancreatectomy because of failure to find an adenoma about 40 per cent were cured. If an adenoma was removed almost 90 per cent of the patients were cured. The operative mortality in recent years has been less than 10 per cent.

CARCINOMA OF THE PANCREAS

Fortunately cancer of the pancreas is relatively uncommon. In 1935, Whipple demonstrated the feasibility of pancreatoduodenectomy in the treatment of carcinoma arising in the head of the pancreas, ampulla of Vater, duodenum, and distal common bile duct.

Because of its location and rapid growth, carcinoma of the body or tail of the pancreas is usually hopelessly inoperable before it produces symptoms of sufficient severity and specificity to result in laparotomy.

Until recent years the treatment of carcinoma of the head of the pancreas has consisted of palliative procedures designed to relieve complications of the disease and not for its cure. An anastomosis between the gallbladder or common duct and the jejunum will relieve jaundice resulting from common bile duct obstruction. If the duodenum is obstructed by the tumor a gastroenterostomy will sidetrack the point of obstruction.

More recently, in an effort to cure the disease, radical pancreatoduodenal resection has been performed in selected cases. This formidable procedure involves the en bloc removal of the distal half of the stomach, the distal common duct, the head and body of the pancreas, the entire duodenum and the proximal jejunum. Continuity of the gastrointestinal, biliary, and pancreatic tracts is restored by gastrojejunostomy, choledochojejunostomy and pancreatojejunostomy. The mortality following these resections has been so high and the cures so few that many surgeons feel that the justification for the radical operation has not yet been demonstrated, and that surgical treatment should perhaps be limited to short-circuiting operations. At the other extreme are a few surgeons who insist that radical total pancreatectomy should be done in all cases in which it is anatomically feasible. It seems to me that a reasonable plan would be to proceed with resection if the lesion is strictly confined to the head of the pancreas or immediately adjacent duodenum. Actually, the tumor may have originated in the ampulla of Vater, and approximately 25 per cent of such tumors are cured by resection. As far as I am concerned, extension of pancreatic tumor to regional lymph nodes, liver, portal vein, or superior mesenteric vessels means inoperability. While there is evidence to suggest that the patient who survives a palliative resection will live twice as long as the one who has had only the short-circuiting procedures, the immediate risk of palliative resection seems too great to justify its performance.

ACUTE PANCREATITIS

The controversy of operative or nonoperative treatment of acute pancreatitis has not been resolved, but most surgeons favor the conservative approach except in those cases in which the diagnosis is in reasonable doubt or when there exist signs of biliary tract obstruction, pancre-

atic abscess, pseudocyst or massive hemorrhage. While it is my feeling that acute pancreatitis can in most instances be best treated conservatively I know of some surgeons of wide experience and sound judgment who practice early operation in these cases with the idea that cholecystostomy or choledochostomy will decompress the biliary tract and improve the patient's chances for survival.

There is one variety of acute pancreatitis for which early operation is usually indicated. I refer to acute pancreatitis which has been initiated by blunt trauma to the abdominal wall. At Charity Hospital nonpenetrating or so-called subcutaneous injuries to the pancreas comprise 5 per cent of the cases of acute pancreatitis. [5]

Despite its deep and seemingly protected position in the abdomen the vascularity and fragility of the pancreas are such that even minor trauma may result in serious injury. A sudden epigastric blunt force may drive the pancreas against the bony spine and contuse, lacerate, or completely divide it. The following case report, previously recorded,[5] illustrates such an injury.

A man was seen two hours after an automobile accident in which the epigastrium had been struck by the steering-wheel. There were dyspnea, hematemesis, epigastric tenderness and rigidity, and signs of peripheral circulatory collapse. The preoperative diagnosis was ruptured spleen. The pancreas was completely divided at its neck, and there was brisk bleeding from the laceration. A liter of blood was present in the peritoneal cavity and in the lesser omental sac, and there were multiple hematomas in the walls of the stomach and transverse colon. This patient recovered after a stormy postoperative course complicated by fever, paralytic ileus and a copiously draining external pancreatic fistula.

This is one of 6 recognized cases of acute traumatic pancreatitis treated at Charity Hospital during the past decade. [5] In each instance the pancreatitis had been initiated by blunt trauma to the epigastrium. A prominent feature in one-half of the cases was a delayed appearance of severe symptoms. Major hemorrhage from the injured pancreas was found to have occurred in 4 of the 5 patients subjected to operation. Multiple, serious, associated injuries precluded laparotomy in 1 case. Significant complications included external pancreatic fistula in 2 cases, a pseudocyst in 1 case, and an abscess in or about the pancreas in 1 instance. The serum amylase was elevated in 3 of the 4 cases in which the test was performed.

Operation would be unnecessary in most cases of pancreatitis following nonpenetrating abdominal injury if serious injury to other organs and massive hemorrhage and disruption of major pancreatic ducts could be ruled out, but it is my opinion that such cases usually cannot be predicted with sufficient accuracy to justify a conservative nonoperative approach.

CHRONIC RELAPSING PANCREATITIS

Chronic relapsing pancreatitis is a very difficult problem about which there is much uncertainty and controversy. Unless cholelithiasis has been demonstrated or there is a strong suspicion of pancreatic carcinoma a determined effort should be made to control the symptoms by conservative measures. So often the disease is progressive and the symptoms become so severe and intractable that operation is required.

The wide variety of operations that are being used in the treatment of chronic relapsing pancreatitis not only indicates the diversity of the clinical and pathological manifestations of the disease but also reflects the inadequacy of these operations.

The selection of the proper operation for the individual patient may prove quite difficult both before and at the time of the operation.[1] In the first place, the cause of the disease is unknown. The most popular etiologic theory is the one which maintains that reflux of bile through a common pancreato-biliary channel is primarily responsible for the pancreatitis, and the most commonly employed operations for the condition are predicated upon this assumption.

The operative maneuver may be directed toward the pancreas or it may indirectly

affect that organ. The most commonly employed of the indirect methods are biliary tract operations, especially cholecystectomy and choledochostomy. There is general agreement concerning the importance of eliminating any pathologic condition of the biliary tract. The occasional patient will be permanently relieved by removal of a calculous gallbladder and prolonged T-tube drainage of the common duct. Other operations on the biliary tract have been used. Doubilet and Mulholand [6] who are strong advocates of the common channel theory of etiology, insist that division of the spastic sphincter of Oddi will overcome biliary obstruction and reflux of bile into the pancreas and relieve most of these patients. Bowers [7] recommends division of the distal common duct and its transplantation into the jejunum; and he reports 11 patients treated in this manner with uniformly good results.

Subtotal gastrectomy with vagotomy has been advocated by Richmond and Colp.[8] This operation diverts the acid gastric contents from the duodenum, and thus, not only diminishes pancreatic secretion but also reduces spasm of the sphincter of Oddi.

Removal of various segments of the autonomic nervous system in an effort to relieve pancreatic pain constitutes another indirect attack upon chronic relapsing pancreatitis. Pancreatic pain is probably transmitted through nerve fibers leading to the sympathetic chain and splanchnic nerves. Bilateral sympathectomy from T-11 through L-1 combined with splanchnicectomy is said to completely denervate the pancreas of all pain sensation. Vagotomy probably plays no role in relieving the patient of pain sensation, but it does diminish the external secretion of the pancreas.

The surgical maneuvers which constitute a direct attack upon the pancreatic lesions include drainage of cysts, opening of the duct of Wirsung with removal of calculi and resection of varying portions of the pancreas.

A simple pancreatolithotomy is occasionally feasible when a solitary calculus is obstructing the main duct of Wirsung. Usually stones are multiple and are scattered in small ducts making it impossible to completely remove them by transductal manipulation.

A few patients with chronic relapsing pancreatitis and pancreatolithiasis are best treated by distal pancreatectomy. This is true of the patients who after traumatic rupture of the pancreas with division of the duct of Wirsung have developed stricture of the duct with chronic obstruction distal to the injury. Distal pancreatectomy will also be applicable in the rare case of spontaneously recurring pancreatitis in which the pathologic process is confined to the body and tail of the gland.

Cattell and Warren [1] have pointed out that there is an occasional case in which there are multiple areas of intrapancreatic obstruction with marked fibrosis and multiple cystic areas in which it appears that no procedure short of possible pancreatectomy will offer a reasonable prospect of relief to the patient. They report having performed pancreatoduodenal resection in 11 patients with chronic relapsing pancreatitis without a fatality, and 10 of the 11 patients were relieved of their symptoms. Despite the great technical difficulties involved in resecting the duodenum and head of the pancreas under these circumstances, this risk must occasionally be assumed in the patient whose symptoms have become so intractable that invalidism, chronic alcoholism, and narcotic addiction have supervened and in whom relief can be obtained in no other way.

Total pancreatectomy has been performed in a few instances. This operation is accompanied by a high mortality rate and leaves the patient a physiologic cripple. Obviously it has a very limited application.

In their recent excellent monograph based on experience with over 1000 patients with surgical diseases of the pan-

creas at the Lahey Clinic, Cattell and Warren [1] sound the following warning relative to interpretation of results of operation for chronic pancreatitis:

"At the present time any appraisal of the surgical therapy of chronic relapsing pancreatitis must be approached with circumspection, and any conclusions arrived at must be regarded as tentative. This indecisiveness is inherent in our lack of precise knowledge regarding the etiology of the disease, and in the limited number of patients who have as yet been treated by any single surgical maneuver. The evaluation of results is further complicated by the high incidence of narcotic addiction among the victims and by the not infrequent observation that complete failure may follow what appeared to have been an excellent early postoperative result."

SUMMARY AND CONCLUSIONS

A discussion of some of the controversial surgical issues in the management of pancreatic disease has been presented. This is a relatively new field of surgery. Etiologic and therapeutic concepts are ever-changing, and many current ideas must be considered tentative opinions rather than established facts. Perhaps most surgeons would regard as reasonable the following suggestions:

1. Duodenal obstruction due to annular pancreas is best treated by duodenojejunostomy.

2. Symptomatic or incidentally discovered ectopic pancreatic tissue usually should be excised.

3. There should be individualization in the selection of therapeutic procedures in dealing with pancreatic cysts.

4. Hypoglycemia due to an islet cell adenoma is a potentially fatal disease. The offending adenoma should be excised. Only patients meeting rigid diagnostic criteria should be subjected to laparotomy. Subtotal pancreatectomy is justifiable if an adenoma is not found.

5. Carcinoma strictly confined to the head of the pancreas or immediately adjacent duodenum should be treated by pancreatoduodenectomy.

6. The treatment of choice in most cases of acute pancreatitis is conservative. Early operation should perhaps be restricted to those patients in whom the diagnosis is in doubt or to those with signs of suppuration, cystic accumulations, massive hemorrhage or biliary tract obstruction. Laparotomy seems indicated in most patients with acute pancreatitis initiated by blunt trauma to the abdominal wall.

7. Certain patients with chronic relapsing pancreatitis will require surgical treatment. At the present time an accurate appraisal of the various proposed operations seems impossible.

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BENIGN BREAST LESIONS

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At first glance, benign breast lesions would appear to offer no particular problem. Situated in an organ that lends itself readily to examination both by the patient and the physician, these lesions make themselves apparent at an early date. The intensive work done by the American Cancer Society in educating the public to look for the cardinal signs of cancer and to do self breast examination has further served to focus attention on these lesions. A lump

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in the breast, undue pain, or a discharge from the nipple usually brings the patient to the doctor. What then is the difficulty? Failure on the part of the physician to realize that no lesion, however well it might *appear* to satisfy the criteria of benignancy, can be other than suspect as long as the lesion remains in situ, and is not subjected to microscopic examination. Even gross removal of the lesion is valueless for it is unfortunate but true that we are unable to make an accurate diagnosis by gross examination alone. To add further to our difficulties, even relatively experienced pathologists differ in their interpretation of some lesions.

With this in mind, we have not thought it amiss to review some of the facts about the breast and benign lesions.

The breast is a modified sweat gland which is under the influence of many hormones, particularly those of the ovary. Estrogen is responsible for branching and proliferation of the duct system while progesterone, acting in combination with estrogen, but not by itself, serves to develop the lobules and alveoli. The liver probably inactivates estrogenic hormone.

The breast, being derived from skin, is subject to a variety of tumefactions which may appear anywhere in the body, as for example, lipoma, dermoid or epidermoid cyst. It is not our intention to discuss these other than to call attention to the fact that lipoma is an extremely uncommon lesion of the breast. Many of the so-called lipomas are in reality nothing but mammary fat, excised surgically, and with a dignified title provided by an obliging pathologist. Nor is it feasible in this brief period of time to discuss all of the benign pathology of the breast. We should like to confine our remarks to fibroadenomata, cystic disease, and discharging nipple.

FIBROADENOMATA

Fibroadenoma is the commonest benign breast tumor in young women of childbearing age. The diagnosis is usually made fairly readily from the following characteristics:

The tumor is encapsulated, freely movable, not adherent to the skin, and fairly firm. A history of rapid growth may be obtained during puberty, pregnancy, and the menopause. Fibroadenomata may be multiple, and occasionally bilateral. Figure 1 shows 7 fibroadenomata removed



Figure 1.

from the left breast of a 21 year old woman in the eighth month of pregnancy. Only 2 nodules had been palpable prior to surgery—1 in the lower inner quadrant of the breast and the other in the upper outer quadrant. A similar tumor mass had been removed from the other breast at an earlier date. A second patient, E. T., age 30, was admitted to Touro on April 19, 1950, for removal of 2 small masses which had been present in the right breast for two and a half years. There had never been any pain or tenderness or discharge from the nipple. The size of the masses was not affected by menses. There was no inflammatory reaction. Patient had had a full-term baby in August, 1949, eight months before admission, and pregnancy had had no effect on the size of the tumors. Patient presented two hard, well-defined masses 2 by 2.5 cm. in the right breast, one at 10 o'clock and one at 12 o'clock. A single soft node, 1.5 cm. in diameter, nontender and freely movable, was felt in the right axilla. Excision biopsy of the tumor at 12 o'clock was done, and grade 3 scirrhus carcinoma was discovered. Radical mastectomy was done, and 4 of 35 lymph nodes removed were found to be involved by the carcinoma. Patient was last seen on June 16, 1953, at which time chest x-ray was negative and

she was apparently free of recurrence. Multiplicity is no proof of benignancy or malignancy.

Prompt excision of apparently benign fibroadenomas is important for the following reasons:

(1) To verify the diagnosis; (2) to avoid a mutilating operation during a period of rapid growth, for example, as might occur during pregnancy or the menopause; and (3) to prevent the rare malignant change which may occur in the form of sarcoma or carcinoma.

A type of fibroadenoma which attains giant size at or near the menopause (also called giant intracanalicular myxoma or cystosarcoma phylloides) has been shown to have definite sarcomatous tendencies. Treatment here is simple mastectomy together with removal of the pectoral fascia. If microscopic sections show definite evidence of malignancy, radical mastectomy should be carried out, since in 4 per cent of the malignant cases, axillary lymph node involvement has been demonstrated. In a review of 77 cases, Treves and Sunderland (Cancer 1951:1286) have offered a new concept of this condition. They argue that the essential difference between fibroadenoma and cystosarcoma phyloides is not the size but the marked overgrowth of the stromal element in the latter, as evidenced by increased amount, increased cellularity, or both. The age of the benign cases varied from 15 to 72 years; of the malignant from 20 to 57. The size of the benign lesions varied from 1 to 15 cm; of the malignant from 3 to 29. The earliest indication of malignant change was anaplasia of the stroma situated near the epithelial structures. They stress the importance of multiple sections from representative areas before a cystosarcoma phylloides is diagnosed as benign. Recommended treatment is local excision of the uncomplicated benign cystosarcoma phylloides especially where there is total encapsulation of the lesion. In benign lesions involving the entire breast, simple mastectomy with removal of the fascia of the pectoralis major muscle should be done. Malignant cystosarcoma phylloides is treated by radical mastectomy.

CHRONIC CYSTIC MASTITIS

Chronic cystic mastitis, also called fibrocystic disease, mastopathy, mammary dysplasia or lobular dysplasia, covers a large group of conditions, neither inflammatory nor neoplastic, which appear to be influenced by endocrine secretions, especially the ovarian hormones. Chronic cystic mastitis is best divided into three subheadings:

1. Mastodynia or fibrous dysplasia
2. Adenosis or Schimmelbusch's disease
3. Cystic disease.

1. *Mastodynia.*—Mastodynia is an endocrine disorder of the well-developed breast in young women which is due to the imbalance between excessive estrogen and deficient corpus luteum secretion. Pain is the outstanding symptom, at first occurring only during the premenstrual period and progressing subsequently to encompass the entire cycle. The only physical findings in addition to tenderness are swollen, granular zones of increased density in the outer or upper hemispheres. Definite masses are not felt. The condition may persist for many years and eventually disappear, or it may progress to another stage of chronic cystic mastitis. In the occasional case, in order to establish a diagnosis, it may be necessary to do a surgical biopsy, but treatment primarily consists of reassurance of the patient against the fear of cancer, frequent examination and occasionally, endocrine therapy, especially progesterone, may be tried.

2. *Adenosis.*—Adenosis is characterized by multiple small nodules in one or both breasts, usually at the periphery, occurring primarily in childless women in their late 30's or early 40's, who have a history of irregular menstrual periods. The breasts are usually small, dense, with a saucer like rim. Pain and tenderness vary with the menstrual cycle. This condition, too, is thought to be due to overactivity of the estrogenic factor. Conservative therapy, with or without hormones is justified only if malignancy can be ruled out by

surgical biopsy of the larger and more discrete nodules. It must be admitted that this is not always satisfactory, since it may prove impractical to excise all the nodules; and since it is known that microscopic sections of different portions of the breast may show varying pathology. Another source of worry is the fact that in a carefully followed series of cases, 3 per cent of cases of adenosis ultimately developed cancer of the breast—about six times the expected incidence in normal women of this age group. Most of the nodular tissue tends to undergo involutional changes with the development of cysts. When borderline malignancy is diagnosed with a familial history of mammary cancer, simple mastectomy would appear to be the procedure of choice, since it has been shown that the daughter of a woman with breast cancer has about three times as much chance of developing breast cancer as a woman in the general population. At this time, it might be well to mention fibrosing adenomatosis—a variety of adenosis. Clinically, it may appear as a single or multiple hard nodules, and it is one of the conditions which in the past has often been mistaken for carcinoma even by experienced pathologists. Frozen section is often inadequate for diagnosis, and it is better to wait for paraffin sections than to do a needlessly radical operation.

3. *Cystic Disease.*—Cystic disease characterized by the rather abrupt appearance of one or more large cysts at or near menopause, appears to be due to the action of the estrogenic hormone unopposed by the luteal factor. In many cases, the cysts are multiple, and occasionally, bilateral. The patient may complain of a sticking or stinging sensation, and occasionally of nipple discharge. The breast and the cyst both transilluminate well. Aspiration biopsy has been recommended both for diagnosis and treatment, but we feel that excision biopsy is the procedure of choice because:

1. Aspiration can be done only for large thin-walled cysts superficially located.

2. It would still be possible to miss an associated malignancy.

3. Approximately one third of the aspirated cysts refill after aspiration and must be treated surgically.

DISCHARGING NIPPLE

Discharging nipple poses a real problem. The color of the discharge is of no help in providing a clue to the underlying pathology, but microscopic examination and chemical analysis with benzidene help. A discharge that contains lipoid material in the form of fat droplets and also desquamated epithelial cells can be accounted for on a secretory basis and may simply mean that the normally present keratin plug is out of the duct, or when occurring in an older woman with palpable distended ducts, may be an indication of early mammary duct ectasia. Mammary duct ectasia is a term coined by Haagensen for a syndrome which at different stages of development presents characteristics identical with the varicocele tumor of Bloodgood, the plasma cell mastitis of Adair, the comedo mastitis of Dockerty, and of fat necrosis. Mammary duct ectasia usually begins after the menopause, but occasionally in younger women, and may be bilateral. The earliest sign is nipple discharge which is apparently due to distention of the terminal collecting ducts beneath the nipple and areola with cellular debris and lipoid containing material. The debris within the ducts may be sufficiently irritating to cause a thickening of the duct walls by fibrosis which in turn may cause retraction of the nipple. If the intraductal debris breaks out into the periductal tissues and stroma of the breast, an intense inflammatory reaction with phagocytic giant cells, polys, and lymphocytes, like that occurring in fat necrosis, may ensue. Occasionally plasma cells predominate. Along with the inflammatory reaction in the breast, clinical signs which mimic carcinoma, a palpable, firm, poorly circumscribed tumor with retraction of the nipple and enlarged axillary lymph nodes may be found. This particular condition emphasizes the fact that it is never wise to do a radical mastectomy without surgical biopsy and microscopic examination of the specimen.

To return to the problem of nipple discharge, if a purely serous or bloody discharge is found, more serious breast pathology must be suspected. As Womack has stated, a serous discharge should be considered plasma and indicative of ulceration in the duct system. Serous and serosanguineous discharges are much more often due to benign lesions than to carcinoma. The usual offending lesion is a papilloma. If a palpable tumor accompanies the discharge, attention should be focused on the tumor, and biopsy done. Where the discharge is not accompanied by a palpable tumor, every effort should be made to determine the cause of the bleeding, since in at least a small percentage of cases a malignancy will be found. Occasionally, transillumination will furnish information as to location of a duct made opaque by its bloody contents. Sometimes leaving the patient alone for a short period of time will permit the involved duct to fill with blood and to present itself as a palpable tumor. At other times a probe may be introduced into a discharging duct at the nipple as suggested by Babcock and the lesion thus identified. Mammography has been discarded as too dangerous because of the danger of setting up a mastitis. At times, segmental pressure has given an indication of the quadrant involved and has been followed by quadrant resection of the breast. If carcinoma is demonstrated in the excised segment, or if the papilloma on histologic examination reveals malignant characteristics, radical mastectomy should be done. Where a single benign papilloma is found, and appears to be adequately excised, nothing further is done but the patient should be observed at frequent intervals because of the known tendency for the lesion to be multiple in 20 per cent of the cases. Where bleeding continues or recurs after local excision, or where bleeding appears to be coming from multiple quadrants of the breast, it would appear wiser to do a simple mastectomy, and if malignancy is found, follow it with a radical operation. Haagenson and Campbell in a review of cases found that no patient developed cancer after local excision of a papilloma, but Donnelly and Kilgore found cancer developing in from 10 to 20 per cent of patients who had had a papilloma excised locally from the same breast two to eight years before.

In conclusion, we should like to urge that every breast tumor be biopsied, that no radical surgery be done without adequate microscopic examination (paraffin section if the frozen section was not conclusive) and that particular attention be paid to the problem of nipple discharge with adequate and frequent long-term follow-up of those patients who have had local excision of a papilloma.

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PULMONARY INFARCTION *

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Early recognition of pulmonary infarction is particularly important to the chest physician. It is necessary to differentiate pulmonary disease from acute cardiac emergencies because early diagnosis is essential to effective therapy and prevention of further damage to the lungs. Wolff [1] has defined pulmonary embolism as a migration of gaseous or particulate matter from any portion of the cardiovascular system, peripheral to the pulmonary artery, and its lodgement in the pulmonary arterial tree. Pre-infarction of the lung occurs when pulmonary emboli produce atelectasis, edema, hemorrhage, and inflammation of the lung. These signs may become resolved, but when necrosis of the pulmonary parenchyma and pleura is followed by fibrosis, the term infarction is applied to the process.

Not all major emboli produce infarction [2] but in many instances of sudden death pulmonary edema is the only significant finding. Miller and Berry [2], in a review of 124 cases, found that occlusion of medium-sized vessels causes the greatest number of infarctions. Single or mul-

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tiple small emboli are frequently silent, but repeated episodes damage the pulmonary parenchyma and produce further distress to an already seriously ill patient. Pulmonary infarction may also be of thrombotic origin. Autochthonous thrombosis occurs in the pulmonary vascular bed in association with arteriosclerosis and extreme sluggishness of the pulmonary circulatory system.[3]

INCIDENCE

The increasing frequency of pulmonary embolism and infarction since World War I is generally recognized.[4] This may be explained by several factors, including better recognition of the phenomenon, greater prevalence of exhaustion and poor health during wartime periods, increased number of older patients now undergoing operation, and bolder operative procedures in patients who constitute poor surgical risks. Pulmonary infarction is probably more common in medical patients, and the diagnosis of hypostatic pneumonia and heart failure undoubtedly previously included many cases of pulmonary infarction. With increasing longevity, chronic illness will further augment the incidence of this accident unless vigorous preventive measures are employed.

Miller and Berry[2] found 124 cases of pulmonary infarction among 4,203 autopsies at the University of Michigan Hospital, between 1940 and 1950. About 60 per cent of these emboli originated in the lower extremities, about 25 per cent from mural thrombi in the right side of the heart, and the remaining 15 per cent from various other sites (Table 1). At Touro Infirmary in New Orleans, the diagnosis of pulmonary embolism was made in 117 cases among 140,050 admissions to the hospital between 1946 and 1953.[5]

The distribution of the pulmonary emboli in Miller and Berry's[2] series of 104 cases of infarction is shown in Table 2. Emboli from different sites of origin have been injected into experimental animals in an attempt to determine their predilection for certain pulmonary fields. Steinberg and Mundy[6], who injected lead shot into the jugular veins of animals, observed that a majority of the emboli lodged in the middle and lower lobes, with no preponderance in either lung. Smith and Abernathy[7] injected into rabbits at varying sites lycopodium spores and clumps of tubercle bacilli in serum as emboli. Emboli injected into the upper portions of the body lodged in the upper pulmonary lobes and those injected into the lower parts settled in the lower lobes. They attributed such a distribution to incomplete mixing of blood from the inferior and superior venae cavae, which produced a layering effect, but the site of origin of the emboli could not be determined from localization of the injury or infarction.

TABLE 1
ORIGIN OF EMBOLI IN 104 CASES OF INFARCTION

SITE OF ORIGIN	PER CENT
Lower extremities	61
Mural thrombi, right side of heart	24
Iliac vessels	9
Inferior venae cavae	3
Bladder and perivesical region	2
Hemorrhoids	1
Total	100

From Miller, R. and Berry, J. B.: Am. J. Med. Sc., 222:199, 1951.

TABLE 2
DISTRIBUTION OF PULMONARY EMBOLI IN 104 CASES OF INFARCTIONS

LOBES INVOLVED	NO. CASES
Right lower	27
Left lower	19
Right middle	11
Left upper	10
Right upper	6
Multiple	31
Total	104

From Miller, R. and Berry, J. B.: Am. J. Med. Sc. 222:199, 1951.

ETIOLOGY

Pulmonary infarction may result from all types of emboli originating in upper or lower extremities. Tomlin[8] reported 5 cases of thrombophlebitis of the upper extremities complicated by pulmonary infarction, which he attributed to chemical irritation and trauma to the veins. Clifford[9] reported a case of aneurysm of the

TABLE 3
CAUSES OF ACUTE COR PULMONALE

A. Great reduction in size of pulmonary vascular bed peripherally.
 1. Multiple small emboli in many arterioles, usually repeated episodes (from venous circulation, right auricle, right ventricle; amniotic fluid; direct tumor; fat emboli after fractures).
 2. Endolymphatic carcinomatosis of lung.
 3. Massive destructive pulmonary disease complicated by sudden further obliteration of pulmonary vascular bed (extirpative or collapse operation, spontaneous pneumothorax, massive atelectasis, extensive pneumonitis).

B. Obstruction of main pulmonary artery trunk or its major branches.
 1. Massive emboli.
 2. Thrombi.
 3. External compression by tumor.

C. Sudden development of left-to-right shunt, rupture of:
 1. Aortic aneurysm into:
 a. Pulmonary artery.
 b. Right ventricle or right auricle.
 2. Interventricular septum:
 a. Infarction.
 b. Ulceration with perforation in acute or subacute bacterial endocarditis.

Modified from Mack et al: Am. Heart J., 39:674, 1950.

trunk and left branch of the pulmonary artery in a young woman with recurrent pulmonary infections and embolizations. Emboli from amniotic fluid, with infarction of the lung, have also been reported [10, 11]. Other etiologic factors in pulmonary infarction and embolism are included among the causes of acute cor pulmonale (Table 3) summarized by Mack and co-workers. [12]

I have encountered 10 cases of pulmonary infarction among medical and surgical private patients during the period 1946 to 1953. Of these, 7 occurred in cardiac patients, 1 followed prostatic operation, and 2 were consequent to cerebrovascular accidents. It is of interest that the cardiac patients were receiving adequate anticoagulant therapy at the time of infarction of the lung.

PATHOLOGIC PHYSIOLOGY

Pathologic studies of pulmonary infarcts reveal them to be of two types. [3] A red or hemorrhagic infarct is noted when the collateral circulation from the bronchial arteries is adequate. It may be wedge-shaped and is usually situated near the surface, turning brownish-black from blood pigment. The pleura is frequently involved. The histologic picture varies from hemorrhage to organization, with some necrosis or ingrowth of granulation tissue. The second type, the anemic, pale infarct, results when the blood supply of emphysematous or fibrotic pulmonary tissue is interrupted. Dry necrosis will predominate, since collateral circulation from the bronchial arteries is not accomplished. This type of infarct is most likely to become secondarily infected. Small pleural effusions frequently accompany pulmonary infarction.

Myocardial ischemia of varying degrees, which occasionally occurs in association with pulmonary embolization, has been attributed by Mack and associates [12] to diminished coronary flood flow, decreased oxygenation of blood flowing through the lungs, and more oxygen required by the heart to meet the increased demands. It is their opinion that recent experiments do not confirm a pulmonocoronary reflex with vagal coronary vasoconstriction. A pulmonopulmonary reflex probably occurs, in which pulmonary emboli are accompanied by reflex vasoconstriction of other pulmonary arteries without intraluminal obstruction. Acute hypoxemia results from pulmonary arteriolar constriction and peripheral vascular collapse.

Pain produced by emboli, with and without infarction of the lung, may simulate coronary pain, since afferent nerves from the pulmonary artery enter the nervous system by the same pathway as those from the heart. [13] Nerve fibers in the pulmonary artery pass to the anterior and posterior pulmonary plexus and then, by way of the vagi and sympathetic route of the upper four dorsa, to the central nervous system; this is the identical path followed by nerves from the heart. There are many interconnecting fibers between the pulmonary and cardiac plexuses.

SYMPTOMATOLOGY

Signs and symptoms consequent to pulmonary infarction depend in large part upon the size and number of infarcts and the antecedent physiologic state of the heart, lungs, and circulatory system. Clinical symptoms of pulmonary infarction vary, but dyspnea, thoracic pain, and cough are common. Although less frequent, hemoptysis and syncope, when present, should alert the physician to the presence of an infarct. Dyspnea may be mild or severe, depending upon the presence and extent of the pulmonary embolism responsible for the infarction. Sudden episodes of coughing are often significant, but coexistence of cardiac disease and cardiac failure may be misleading. Probably the most common symptom of single or multiple pulmonary infarcts is thoracic pain, which may be deep-seated or pleuritic in type, accompanied by shallow respiration. Whereas anginal-like pain may be present, coexistence of organic cardiac disease and coronary involvement further complicates the diagnosis. Hemoptysis varies from pink-tinged sputum to frank blood.

Abnormal physical signs are important, especially in the absence of symptoms accompanying small single or multiple infarcts. Sudden episodes of septic fever, often low grade, persisting for several days to a week or longer should suggest this diagnosis. Shaking chills are rare, unless complicating sepsis is present. A sudden unexplained rise in pulse rate, with or without fever, should be noted with suspicion. Godfrey [14] has directed attention to the presence of thoracic tenderness with pulmonary infarction. Extreme tenderness of the thoracic wall, severe enough to cause the patient to cry out or flinch when moderate pressure is applied approximately over the site of the infarction, may be an early sign. It may appear as early as six hours after the onset of pleuritic pain and subside within forty-eight to seventy-two hours.

If the area of infarction is sufficiently large, physical signs, such as areas of impaired percussion, crepitant and subcrepitant rales and bronchial breathing, may be noted. A friction rub, audible in a minority of cases, may exist for only a short time. Pain localized in the arm or leg, although remote, should call attention to the possibility of a pulmonary infarct. Shock may be an initial symptom in massive pulmonary embolization with infarction, but the resulting cerebral anoxemia may be misleading by suggesting the brain rather than the lungs as the site of injury. [15] Faintness, syncope, and convulsions may ensue, simulating an acute cerebral vascular accident. Physical signs of acute cor pulmonale may be noted, with a prominent pulsation in the second and third intercostal spaces to the left of the sternum, accentuation of the pulmonic second sound, and cyanosis. Dilatation and pulsation of the jugular vein may also be observed. Disturbances in cardiac rhythm, which may develop suddenly, are not pathognomonic, being noted in organic cardiac disease as well.

LABORATORY FINDINGS

Laboratory data offer additional aid in the diagnosis of pulmonary infarction. Slight or moderate leukocytosis often develops shortly after occurrence of pulmonary infarction but is not a constant accompaniment of pulmonary embolism without infarction. An increased sedimentation rate appears early and may reach a high level within several hours. The icterus index is usually elevated, since hyperbilirubinemia occurs in about half the cases. [1]

Radiologic study is helpful when the typical triad of elevation of the diaphragm, pleurisy, and an infarct shadow is present. Short [16], in a review of radiologic examinations of 120 patients concluded that a wedge-shaped shadow is not to be expected in the majority of cases. The etiology of these cases is presented in Table 4. In one-half the cases in this series, the shadow of the infarct appeared in the right lower lobe and in one-third the cases in the left lower lobe. There were multiple emboli in 43 per cent of the

TABLE 4
RADIOLOGIC STUDY OF 120 PATIENTS WITH PULMONARY INFARCTION OR EMBOLISM

Etiology	No. cases	Infarction	Embolism without Infarction	X-ray examination
Cardiac	54	53	1	44
Postoperative	30	22	8	21
Obstetric	20	19	2	20
Other	16	12	5	9
Total	120	106	16	94

From Short, D. S.: Quart. J. Med. 20:233, 1951.

cases. Whereas the most characteristic appearance was a well defined area of consolidation, basal clouding, a costophrenic shadow, a linear shadow, and evidence of scarring were also noted. These shadows may not appear for several hours after infarction but are usually detectable within a period of twelve hours. Hanelin and associates [17] described 5 cases of thrombosis involving the main pulmonary artery or its branches, 4 of which were accompanied by pulmonary infarction. Roentgenographic findings included alteration in hilar contours, changes in the vascular pattern in the pulmonary fields, and occasional areas of increased radiolucency in the lung distal to the thrombus.

Serial roentgenographic studies reveal a rate of resolution varying from days to weeks, a definite scar rarely being visible after healing. Fifty-six per cent of the patients described by Short [16] had pleural involvement, and 33 per cent had pleural effusion, usually bloody. Elevation of the diaphragm on the side of the lesion, with restriction of its excursion, was a striking feature in 35 per cent of the 120 patients.

Among the factors responsible for negative roentgenograms are inadequate technic, which is common in portable films, examination too early or too late, presence of pulmonary congestion or hydrothorax, and an infarct shadow hidden behind the diaphragm or the heart. Reliance should therefore never be placed on a single film; re-examination should be carried out with the use of oblique and lateral views and, occasionally, fluoroscopy and tomography. Furthermore, serial studies will often demonstrate multiple areas of infarction previously unrecognized.

The electrocardiogram is of considerable diagnostic value in pulmonary embolization with infarction. However, it should be realized that the presence of pre-existing cardiac disease may also be reflected in the tracing. For example, the pattern of acute myocardial infarction may obliterate that of pulmonary embolism. When pulmonary embolism is suspected, an electrocardiogram should be obtained immediately and repeated daily or following each clinical episode. Electrocardiographic changes, when present, usually resemble those of acute cor pulmonale and result from myocardial ischemia, especially of the right ventricle and posterior wall of the left ventricle. [12] Depression of the ST segment, of the staircase variety, in leads I and II and in V_5, and V_6 is common, as are inversion of the T wave in the precordial leads, usually V_2 to V_4, and development of a Q_3 wave with T_3 inversion. In lead AVF, the Q wave may be small (vertical position) or absent (horizontal position). Right bundle branch block, complete or incomplete, temporary or permanent, may occur and has been ascribed to hypoxia of the right ventricle. Cardiac arrhythmia, a frequent manifestation, is considered to be neurogenic in origin or due to myocardial ischemia. The characteristic sudden appearance and abrupt evolution of these electrocardiographic changes, and their rather rapid return to normal, distinguishes them from examples of posterior myocardial infarction.

DIAGNOSIS

The diagnosis of pulmonary infarction depends upon the indexes of suspicion of the physician. It should always be considered when fever of unexplained origin, cough, thoracic pain, and leukocytosis suddenly develop in an elderly, bedridden medical or surgical patient. Careful examination of the limbs of such an individual will often reveal tenderness in the veins of the plantar region of the foot or

muscles of the calf, along the course of the veins of the thigh, or in the inguinal region, as well as enlarged lymph nodes. Occasionally, the extremities may be edematous, but phlebothrombosis may exist without evidence of inflammatory reaction, so that other sites of emboli must be sought. Clinical laboratory and roentgenographic examinations may offer some assistance, but unusual combinations of symptoms and signs often create confusion. Acute exacerbations, followed by relatively silent periods, should suggest the diagnosis to the clinician. Included in the differential diagnosis should be abdominal diseases, in which history and splinting of the upper abdominal region may be of diagnostic assistance, as well as such pulmonary states as mediastinal emphysema, spontaneous pneumothorax, bronchiectasis with areas of pneumonitis, lobal pneumonia, pulmonary abscess and postoperative pulmonary atelectasis.

Despite the fact that mastalgia in women is occasionally confusing, cardiac conditions are by far the most important to distinguish from pulmonary infarction. Typical angina and acute myocardial infarction may accompany pulmonary infarction but should be clearly differentiated, if possible. The history is important, since coronary thrombosis generally occurs in ambulatory patients or at night during sleep, whereas infarction of the lung is essentially a disease of the bedridden or convalescing. The onset of pulmonary infarction is usually sudden and is manifested by dyspnea, thoracic pain, syncope, and occasionally cyanosis. The pain is usually sharp and pleuritic in nature and may be accentuated by pressure on the thoracic wall over the infarcted area. Coronary thrombosis has a more gradual onset and is characterized by pressing or constricting pain, usually substernal in location with a typical radiation. Sharp lowering of blood pressure and paroxysmal tachycardia are early manifestations of pulmonary embolism with infarction. The onset of acute coronary thrombosis is usually more insidious, with lowering of blood pressure to the shock level, followed by a rapid thready pulse.

Electrocardiographic changes in pulmonary infarction are transitory, appearing suddenly and progressing rapidly. Reciprocal changes in the limb leads characteristic of coronary thrombosis are usually not observed. It should be reemphasized that the two conditions may occur simultaneously. I have had 2 patients in whom acute coronary thrombosis and pulmonary embolization with infarction were present at the onset. Table 5 illustrates the comparable clinical features, laboratory data and electrocardiographic findings in acute pulmonary embolization and in coronary occlusion with posterior wall infarction.[15]

TREATMENT

Treatment may be divided into two phases: (1) immediate emergency measures to combat acute pulmonary embolization with shock and respiratory difficulty, and (2) anticoagulants and venous ligation to prevent further pulmonary embolization and infarction of the lung.

Faxon and associates[18] found that the reflex spasm which occurs immediately after pulmonary embolization can be modified by stellate ganglion block and that relief of the spasm may diminish the infarcted area of the lung. In 3 patients in whom the procedure was carried out almost immediately, striking relief was observed. It appears, however, that after the first twelve hours, stellate ganglion block is useless, either because the spasm has subsided or because the effects of the occlusions have become firmly established. Papaverine, in intravenous doses of 1 or 2 gr., may be injected slowly to relax muscle, and large doses of atropine may be employed early to inhibit vagal impulses. The addition of oxygen, particularly when administered with a pressure mask, and the occasional use of blood or plasma to combat shock are also of assistance. Cardiac arrhythmias should be treated in the usual fashion in order to reduce the ventricular rate and restore normal rhythm, when possible. The use

TABLE 5
COMPARISON OF CLINICAL PICTURE

	Acute pulmonary embolization with pulmonary infarction	Coronary occlusion with posterior wall infarction
History	Convalescent (medical or surgical)	Angina on effort
Onset	Sudden, overwhelming	Gradual, hours or days
Pain	Severe, often pleuritic, no typical localization	Pressing or crushing; substernal to shoulder and arm
Dyspnea	May be sudden and intense; at times suffocating	Usually mild; when severe, mounts gradually
Cyanosis	May be pronounced; not relieved by O_2	Usually mild or absent
Shock	Often first symptom; may precede pain in ⅓ patients	When present, culminates several hours increasing pain
Syncope	May be initial symptom	Rare; may be terminal
Pulse	At onset, rapid and thready	At onset, normal or slow
B. P.	Usually low (part of shock)	At onset, normal or high
Fever	Early; may reach high levels	24-36 hours after onset; moderate
Leukocytosis	Early; high count	2nd-3rd day; moderate
Icterus index	Often increased (hepatic anoxemia?)	Not altered
X-ray	Pulmonary infarction? Dilated pulmonary artery?	Not characteristic; pulmonary congestion?
ECG	Early: atypical right bundle branch block	Early: RST up in II, III
	Later: large S_1, Q_3 and negative T_3	Later: Q_2Q_3 and negative T_2 and T_3

Modified from Roth, I. R.: Am. J. Med., 4:493, 1948.

of a binder to the thoracic wall will often reduce the quantity of opiates necessary to relieve pain. Extensive pleural effusions, which occasionally ensue, must be aspirated.

Prevention of further embolic phenomena and pulmonary infarcts depends in great part upon use of anticoagulant therapy and venous interruption. Baker and associates [19], who stated that neither of these has entirely eliminated this accident, have divided the therapeutic measures into two categories: (1) prophylaxis and (2) definitive treatment. Prophylaxis includes prevention of pulmonary embolism in a patient without demonstrable signs of intravascular thrombosis but who is considered a likely candidate, i. e., any patient over forty years of age in whom prolonged bed rest must be enforced following an operation or major injury or any chronically ill medical patient. In such cases anticoagulants should be used except in the presence of an open wound, contemplated second stage operation, or a coagulation defect. If anticoagulants are contraindicated, bilateral interruption of the common femoral vein, common iliac vein, or inferior vena cava should be accomplished. [20] Definitive treatment consists in measures to control pulmonary embolism and infarction in a patient who has already demonstrated evidence of intravascular thrombosis, such as thrombophlebitis, phlebothrombosis, or pulmonary embolism. These authors performed bilateral interruption of the femoral vein even if evidence for pulmonary embolism was only presumptive. Anticoagulants were employed for patients who had phlebitis without pulmonary embolism and for the group in whom pulmonary embolism was a possibility but not definitely established. Recent reports on anticoagulants reveal little difference in results with dicumarol, tromexan, or danilone [21, 22]. Wolff [1] outlined a general plan of treatment, which is presented in Table 6.

PROGNOSIS

The prognosis of pulmonary infarction depends upon the etiologic factor responsible for the infarction. The presence of large pulmonary emboli and acute cor pulmonale enhances the danger of death.

When small pulmonary infarcts are recognized early and measures are employed to prevent their recurrence, the prognosis is exceedingly good, and the patient may recover completely. Such patients have often received anticoagulant therapy over a period of months or years as a prophylactic measure against the danger of repeated episodes. Age of the patient and status of his cardiovascular and renal systems also apparently influence prognosis. Adequate treatment of any underlying primary disease is, of course, essential.

TABLE 6
INDICATIONS FOR ANTICOAGULANTS OR VENOUS LIGATION IN PULMONARY INFARCTION

A. *Anticoagulants*, for the following conditions:
 1. Predisposition to phlebitis (prophylactically), if operation not contemplated (acute myocardial infarction, severe congestive heart failure).
 2. Thrombophlebitis (therapeutically), if operation not contemplated (acute myocardial infarction, congestive heart failure, postoperative and obstetric patients in whom danger of hemorrhage is past).
 3. Phlebitis, including pulmonary embolism, when venous ligation is prohibitive risk.
 4. Pulmonary embolism, when seat of venous thrombosis is inaccessible surgically or when emboli from heart are suspected.
 5. Emboli which continue to occur despite venous ligation.
 6 Thromboembolism suspected but cannot be proved.

B. *Venous ligation*, for the following conditions:
 1. Prevention of pulmonary embolism in elderly patients prior to major operation.
 2. Phlebitis and/or pulmonary embolism, when operation contemplated.
 3. Phlebitis and/or pulmonary embolism when anticoagulants contraindicated.
 4. Pulmonary emboli which continue to occur despite apparent adequate anticoagulant therapy.

Modified from Wolff, L.: Circulation, 6:768, 1952.

SUMMARY

The chest physician, particularly, must strive for early recognition of pulmonary infarction and its differentiation from acute cardiac emergencies. These conditions often coexist, and proper treatment may be lifesaving. Better care of chronically ill, bedridden medical, surgical and obstetrical patients will reduce the incidence of thrombosis and embolic phenomena. The clinical picture and laboratory data have been reviewed in an attempt to clarify a condition which may complicate a seemingly benign primary disease. Serial roentgenographic and electrocardiographic studies are of considerable value when pulmonary infarction is suspected. Management consists in immediate emergency measures and specific therapy to prevent further infarcts. Long-term anticoagulant therapy may be necessary as a prophylactic and therapeutic measure.

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CANCER OF THE LUNG

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NEW ORLEANS

At the present time, there is tremendous interest on the part of the lay public and the profession in cancer of the lung, and it is well that there should be, because cancer of the lung is increasing more than any other cancer in the body. Although all cancers are increasing somewhat due to the fact that people are living longer now and are reaching the age at which cancer is likely to develop, the incidence of cancer of the lung has outstripped every other form of cancer.

INCREASING INCIDENCE

In the United States, between 1914 and 1950, cancer of the lung in women increased from 0.6 per 100,000 population, to 4.3 per 100,000 population, and in men the increase was from 0.7 per 100,000 population to 19. In Holland, as in many of the other European countries where autopsies are done on almost every individual who dies, lung cancer increased twenty-four fold in men and ten-fold in women from 1924 to 1951. It is frequently stated that there is actually no increase in the incidence of bronchogenic cancer, but that previously it was unrecognized and diagnosed as some other condition and that the increase at present is only apparent and not real. We are convinced that the increase in the incidence of cancer of the lung is real for two reasons: First, if cancer of the lung was missed previously, it must have been diagnosed as some other condition, presumably, tuberculosis. If this were true, there should be a decrease in the incidence of pulmonary tuberculosis in the older age group in which cancer of the lung occurs. Such is not the case; as a matter of fact, since 1933, the incidence of tuberculosis in men over 60 years of age has not decreased, but at the same time the incidence of cancer of the lung has materially increased. The very marked increase in the incidence of cancer generally in men is almost entirely due to the increase in cancer of the lung. Another reason why we believe cancer of the lung is actually increasing and is not merely relatively increasing is that in those countries where autopsies are done almost routinely the increase in the incidence of cancer of the lung has been proportionate to the increase in our own country where autopsies are relatively infrequent. It does not seem likely that pathologists would miss a cancer of the lung at autopsy.

In the United States, cancer of the lung in 1920 represented 1.1 per cent of all cancers; in 1930, 2.2 per cent of all cancers; and in 1948, 8.3 per cent of all cancers. We have predicted that in 1970 cancer of the lung will represent 18 per cent of all cancers or almost 1 in every 5. Since cancer of the lung is primarily a disease of men it might be predicted that in 1970, 1 of 2 or 3 men with cancer will have cancer of the lung. It has been estimated by the American Cancer Society that 1 in every 5 persons 40 years of age will develop cancer. Therefore, it may be computed that in 1970, unless something is done to prevent it, 1 of every 10 or 15 men living will have a cancer of the lung.

It is a well-known fact that past the age of 40 cancer generally increases with advancing age, there being a progressive increase in the incidence with each added year of life. This is true of all cancers except cancer of the lung, which increases markedly to reach a peak incidence at the present time at approximately 55 years of age, following which there is a decrease in incidence. This different behavior of cancer of the lung from other cancer has been present for some time. There has

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been, however, an alteration in the behavior of cancer of the lung in that the peak incidence fifteen years ago occurred at a later age, about 65, and the peak was not as high. In other words, the peak incidence of cancer of the lung is becoming higher and is being reached at an earlier age than previously. I believe the reason lung cancer does not behave as do other cancers is that the individual who has been a heavy smoker for many years has subjected his heart and blood vessels to the deleterious effects of tobacco and is likely to develop coronary thrombosis and die of this disease and not live long enough to develop cancer of the lung. A dubious advantage, therefore, of cigarette smoking is that one might prevent a cancer of the lung by developing coronary thrombosis relatively early and dying before the carcinogenic effect of cigarettes has a chance to exert itself. One might even suggest that deaths from both these conditions might be prevented by an individual shooting himself at the age of 40.

CIGARETTE SMOKE AS CAUSE OF INCREASE

Whereas there is some lack of unanimity of opinion concerning the cause for the unprecedented increase in the incidence of cancer of the lung, we are convinced from our observation that it is due to the carcinogenic effect of cigarette smoke. This assumption is based upon a number of facts. There is a distinct parallelism between the consumption of cigarettes in the United States and other countries of the world and the increase in incidence of cancer of the lung allowing for sufficient delay for the carcinogen to exert its effect. It has also been shown, without any question or doubt, that the smoke from cigarettes contains a cancer producing agent. One of the most conclusive evidences of this is research done by Graham and Wynder. In this particular investigation, they obtained the smoke from the cigarette in as nearly the same manner as a human being when he smokes. A robot machine smoking 24 cigarettes at a time so operates that every sixty seconds a drag of two seconds on the cigarette is maintained. The smoke obtained from the cigarettes is cooled and the tarred residue obtained in this way is applied to the skin surfaces of animals three times a week. At the end of eight months, one benign tumor developed at the site of the application. At the end of a year one cancer developed, and at the end of two years 44 per cent of the animals developed a cancer at the site of the application of the tarred residue which was identical with that seen in human beings. This malignant tumor metastasized, killed the animal, and was also transplantable. A criticism has been raised that one cannot compare animal cancer with human cancer. No attempt is being made to do so. However, it cannot be denied that cancer of the lung is increasing more rapidly and out of proportion to every other cancer and that there is a distinct parallelism between the consumption of cigarettes and the increased incidence of cancer of the lung. It has also been proved that there is a cancer-producing agent in the smoke obtained from cigarettes. It is, therefore, logical to assume that the unprecedented increase in the incidence of cancer of the lung is due to cigarette smoking.

RACE AND SEX

Cancer of the lung involves both the white and the colored races. In our series at the Charity Hospital, the incidence of bronchogenic cancer in the white race was 177 per 100,000 admissions as compared to 130 in non-white. It is primarily a disease of men; 90 per cent of our 1365 cases were in men. Whereas Graham is of the opinion that the condition will become as frequent in women as in men because women are beginning to smoke almost as much as men, we do not believe that this will ever be the case, because we believe that the mucous membrane of men is more susceptible to the carcinogenic effect of tobacco than that of women.

SITE OF INVOLVEMENT

Cancer involves both lungs with almost equal frequency; the right lung was in-

volved in 54 per cent of our cases and the left lung in 46 per cent. Of practical importance, however, is the fact that cancer of the lung is primarily a disease of the upper lobes. In our series, the right upper lobe was involved in 26.8 percent and the left upper lobe in 29 per cent. It is thus seen that in 55 per cent of our cases the lesions were in the upper lobes. This is of practical importance because the tumors are frequently in a position which is difficult to visualize bronchoscopically. Three types of tumor, epidermoid, undifferentiated, and adenocarcinoma, are found. In males epidermoid carcinomas are the most frequent, representing 54 per cent, undifferentiated carcinomas, 30 percent, and adenocarcinomas, 16. On the other hand, in females 20 per cent of the tumors were epidermoid, 28 per cent were undifferentiated, and 52 per cent were adenocarcinoma.

AGE

Bronchogenic cancer is a primary disease of advancing age. The greatest incidence in our series was in the sixth decade, 37 per cent, followed in frequency in the seventh decade, 31 per cent and the fifth decade, 18 per cent.

SYMPTOMS

Unfortunately, there are no classical manifestations of bronchogenic cancer. As a matter of fact, we are convinced that it is frequently present for a relatively long period of time without producing any symptoms. Because the bronchus is either incompletely or completely occluded, there is a likelihood of stasis within the portion of the lung distal to the bronchial neoplasm with the development of infection. It is for this reason that not infrequently the earliest manifestation of bronchogenic cancer is a lower respiratory tract infection which is diagnosed as influenza or viral penumonitis. In over half of our cases, a history of a previous respiratory tract infection was present. Cough is without a doubt the most frequent manifestation of bronchogenic cancer, but because most, if not all, heavy cigarette smokers cough, it is likely to be disregarded. Hemoptysis means ulceration of the respiratory tract and always demands investigation. Not all persons past 40 years of age with hemoptysis have a bronchogenic cancer, but in such an instance careful examination is obligatory either to confirm or to exclude the diagnosis. Thoracic discomfort is a manifestation which also must be investigated. Most of us are not aware of the fact that we have a chest. If a man past 40 who has been a heavy smoker becomes conscious of the fact that he has a chest, it may mean bronchogenic cancer. Wheezing, which always means bronchial obstruction, in an individual who previously had no evidence of asthma and who developed it past the age of 40, particularly if he is a man who had been a heavy smoker, must be carefully examined to exclude the diagnosis of bronchogenic cancer. The late manifestations of bronchogenic cancer are those of extensive disease and infection. These consist of fever, pain, digestive disturbances and emaciation. In our series of resected cases, cough was present in 88 per cent; weight loss in 67 per cent; chest pain in 62 per cent; hemoptysis in 53 per cent; a previous respiratory tract infection in 53 per cent; dyspnea in 49 per cent; weakness in 46 per cent; wheezing in 15 per cent; night sweats in 11 per cent, and voice change in 6 per cent. Involvement of the recurrent laryngeal or phrenic nerves is of importance because it has been accepted by many thoracic surgeons as an evidence of inoperability. Whereas involvement of either one or both of these nerves indicates extension beyond the lung to involve the nerve, it does not necessarily mean that the lesion cannot be resected or that the patient cannot be cured. For this reason, we have been unwilling to accept evidence of recurrent laryngeal or phrenic nerve paralysis as an indication of inoperability, but unless operability is precluded by some other evidence we believe the patient should be given the advantage of an exploratory thoracotomy.

DIAGNOSIS

The diagnosis of bronchogenic cancer is usually not difficult if one will only consider the possibility of its existence. Roentgenography is unquestionaly one of the most valuable methods of making a diagnosis, primarily because of the ease of obtaining a roentgenogram. Obviously, roentgen diagnosis is only presumptive and is never absolute. An x-ray is of value in detecting a bronchogenic neoplasm in a number of ways; in those lesions in which there has been considerable infiltration of the lung parenchyma, a shadow can be seen on the roentgenogram. If the tumor is small and incompletely occludes the bronchus, obstructive emphysema may develop. This is due to the fact that the bronchial tubes are not rigid tubes but move with respiration; during inspiration, they dilate and during expiration they contract. An incompletely obstructing tumor of the bronchus will permit air to get beyond the tumor during inspiration but during expiration, due to the contraction of the bronchus, a complete occlusion results and air is trapped distally. In those cases in which the tumor completely occludes the bronchus, absorption of the air distal to the site of obstruction and resulting atelectasis are of significance. Also in certain of the peripherally located lesions and in those in the upper lobes, bronchography obtained following the introduction of a contrast substance into the bronchi is of value in demonstrating obstructing lesions of the bronchus. In 82 per cent of our cases a correct diagnosis was made by roentgenographic findings.

Bronchoscopic examination is of importance in all individuals with suspected bronchogenic cancer, but unfortunately, a positive diagnosis can be made by this method of examination in only approximately one third of the cases. However, bronchoscopy should be done in most cases because not only is it of value in permitting visualization of those lesions which are within bronchoscopic vision and the obtaining of material for a biopsy when the tumor can be seen, but it also is of value in determining the possibility of inoperability. In those cases in which the carina or trachea is involved or in which there is a great deal of fixation of the bronchi, the case is probably inoperable.

The most valuable method of making a positive diagnosis of bronchogenic cancer, in our hands, has been cytologic examination of the sputum. It may be obtained either by expectoration or by material aspirated during bronchoscopy. In 68 per cent of our cases, it was possible to make a positive diagnosis of bronchogenic cancer in this way. Aspiration biopsy has been recommended by many; we believe, however, that it should not be used in a patient in whom a cure might be possible because of the danger of implanting tumor cells along the course of the aspirating needle. We use aspiration biopsy only in the obviously inoperable patient with a peripherally located lesion, in order to make a positive microscopic diagnosis. Although we have been able to make a positive preoperative diagnosis of bronchogenic cancer in 80 per cent of our cases, in 20 per cent the diagnosis could be made only by thoracic exploration.

TREATMENT

The only curative treatment of bronchogenic cancer at the present time is extirpation of the involved lung. Although it has been advocated by some that lobectomy may be used in the treatment of bronchogenic cancer and although certain patients with cancer of the bronchus can be cured by lobectomy, we are convinced that lobectomy is not a good cancer operation and should not be used except in the patient in whom careful preoperative pulmonary function studies indicate that the patient cannot tolerate a pneumonectomy. In doing a lobectomy it is not possible to remove en bloc all the mediastinal lymph nodes which is essential in the treatment of bronchogenic cancer. The treatment of bronchogenic cancer, therefore, consists, unless there is a contrain-

dication to it, of removal of the entire involved lung with an en bloc excision of the mediastinal nodes. In our series of 1365 cases, 619 (45 per cent) were considered hopelessly inoperable when first seen. Seven hundred forty-six were considered operable, of which 66 (9 per cent) refused surgery; 680 were explored of which 298 (35 per cent) were found to be nonresectable and 42 (18 per cent) of these died in the hospital. There were 442 in which a resection was accomplished, of which 84 (19 per cent) died in the hospital; 358 (81 per cent) were discharged from the hospital. The management in our 1365 cases may be summarized as follows: No operation was done in 51 per cent; 49 per cent were operated upon, and 33 per cent were resected.

There has been some difference of opinion as to the advisability of performing palliative resection for cancer of the lung. There probably is no abdominal surgeon who would hesitate to resect a malignant lesion of the colon in a patient who has metastasis to the liver, because even though the patient will die of his cancer because of distant metastasis, he can be made more comfortable for the remaining days of his life; actually his life will be prolonged, because his obstruction will be relieved. For some reason or other, this philosophy has not been accepted generally by thoracic surgeons, and the majority have been reluctant to perform palliative resection for bronchogenic cancer. Early in our experience, we decided that palliative resection for bronchogenic cancer is justified in order to make the remaining days of a patient's life more comfortable, to rid him of his suppurative disease, and to relieve his hemorrhage. Seventy-four per cent of our cases had palliative resections, the lesion had extended beyond the lung to involve other structures, the mediastinal lymph nodes, the mediastinum, pericardium, chest wall and/or the diaphragm. As will be subsequently demonstrated, not only have we made these patients more comfortable but we have also actually prolonged their lives and cured some of them.

The 84 deaths following resection for bronchogenic cancer may be divided as follows: Almost 46 per cent were cardiovascular deaths, and since the majority of these patients were in the sixth and seventh decades, it is obvious that this cause of death can never be eliminated; 32 per cent were respiratory; 15 per cent were due to hemorrhage, and 7 per cent were due to miscellaneous causes.

It is to be deplored that only 49 per cent of our cases were considered operable and only 33 per cent were resectable. This is understandable, however, when one realizes that the average delay from the onset of the first symptoms until definitive therapy was instituted was 8.7 months. Unfortunately, the delay was longer in the private cases than in the charity cases, 9.3 months in the former and 7.5 months in the latter. In an attempt to determine who was responsible for the delay, the patient or the physician, the following results were obtained: The patient was responsible for delay of an average of 2.8 months and the physician for 5.5 months. When this is broken down into the private and charity series, some incriminating evidence is obtained. In the charity series the patient was responsible for delay of three months and the physician 3.6 months; whereas in the private series the patient was responsible for delay of 2.6 months and the physician for a delay of 6.2 months. The longer delay in the private series we are sure is due to the fact that in the majority of patients a diagnosis of viral pneumonitis was made, and the patients who were able to afford private physicians were sent to a hospital and treated with antibiotics for weeks and months, with some degree of improvement to be sure because the secondary pneumonitis associated with the bronchogenic neoplasm was controlled; but unfortunately, there was a delay in suspecting bronchogenic cancer. It is to be deplored that so much emphasis was placed upon viral pneumonitis approximately

five years ago. Viral pneumonitis was correctly called an atypical pneumonitis, but unfortunately, the profession has come to think of viral pneumonitis and atypical pneumonitis as being synonymous; and, almost without exception, whenever an atypical pneumonitis is seen, a diagnosis of viral pneumonitis is made. Although we are sure that a man past 40 who has been a heavy smoker for a number of years can develop a viral pneumonitis, we are equally convinced that his chance of having a bronchogenic cancer causing his atypical pneumonitis is greater. Although we would not object to such an individual being treated for a period of a few weeks for his viral pneumonitis, one is obligated in such a case, unless there is complete subsidence of all manifestations within a very short period of time, to consider the possibility of bronchogenic carcinoma and to institute measures either to prove or to exclude such a diagnosis. It is only by suspecting bronchogenic carcinoma more frequently, particularly in individuals who have been heavy smokers, that an early diagnosis can be made, because a man at the age of 50 who has smoked heavily for twenty-five years has 50 times more chance of developing cancer of the lung than does a man of the same age who has never smoked.

SURVIVAL RATES

In spite of the fact that in this series of cases there was an average delay of 8.7 months from the onset of the first symptom until definitive therapy was instituted, the overall results in the resected cases were not too bad; 15 per cent of the resected patients are alive at the end of five years and apparently free from disease. Following resection there was a rapid falling off of the survival rate until the second year, following which a plateau was reached. Of all the patients having resections, 49 per cent were alive at the end of six months; 31 per cent at the end of the year; 18 per cent at the end of two years; 16 per cent at the end of three years, 16 per cent at the end of four years, and 15 per cent at the end of five years. As might be surmised there is considerable difference in those cases in which the operation was done as a palliative procedure and those in which the lesion was apparently confined to the lungs. The survival rates in the former group, (those in which there was extension beyond the lung at the time of resection) were as follows: 44 per cent were alive at the end of six months, 21 per cent at the end of a year, 10 per cent at the end of two years, 8 per cent at the end of three years, 7 per cent at the end of four years, and 6.8 per cent at the end of five years. In the group in which the lesion was apparently limited to the lung, 62 per cent were alive at the end of six months, 57 per cent at the end of a year, 39 per cent at the end of two years, 37 per cent at the end of three years, and 34 per cent at the end of five years. As mentioned previously, we adopted the philosophy of doing palliative resections in extensive bronchogenic cancer with the idea of making the patient more comfortable for the remaining days of his life, but not anticipating that a life expectancy would be increased. The fact that almost 7 per cent of those with extensive disease are alive and apparently well after five years demonstrates the validity of this contention even though we did not anticipate that the life expectancy would be increased. In all the cases in which a resection was not done, which obviously represents the more advanced group, some other type of palliative therapy was used, x-ray, nitrogen mustard, or a combination of both. The results here are not good. Only 17 per cent were alive at the end of six months, 5.7 per cent at the end of a year, 1.3 per cent at the end of two years, 0.3 per cent at the end of three years, and only 1 out of 500 cases is alive at the end of four years. It is thus seen that no other type of therapy, aside from resection, offers anything as regards cure.

In computing the survival rates in these series, we have assumed that all patients

dying have died of their disease. One must recall, however, that 15 per cent of the general population of this age group are dead at the end of five years and only 85 per cent are living, so that these results are actually better than they seem. To recapitulate, whereas 85 per cent of the population is alive at the end of five years, 6.8 per cent of those with extensive disease were alive at the end of five years, 15.2 per cent of all those subjected to resection, and 34 per cent in whom the lesion apparently was not extended beyond the lung. If we consider all of our cases, 6.6 per cent of the entire group are alive at the end of five years, whereas only 1 patient out of 500 in which resection was not done is living four years later.

The results at the present time in the treatment of bronchogenic cancer are not good, because an over-all salvage rate of only 6.6 per cent of the entire group is not good. However, the salvage rate of 34 per cent in cases in which the lesion was apparently limited to the lung is much better. It, therefore, is obvious that if better results are to be obtained in the treatment of bronchogenic cancer, it is necessary that the diagnosis must be made early. As mentioned previously, undoubtedly bronchogenic cancers are present for some time and can be diagnosed even before symptoms are present in all individuals, particularly men past 40 who have been heavy smokers. Such individuals who have unexplained thoracic discomfort must be suspected of having bronchogenic cancer until proven otherwise and measures must be instituted either to exclude or to prove such a diagnosis. It is because of the delay of over eight months that the results of the treatment of bronchogenic cancer today are not as good as they should be.

In order to detect an asymptomatic bronchogenic cancer, it is imperative that all men past 40 who have been heavy smokers have a chest film at least every six months, preferably every three months so that when they do develop bronchogenic cancer, it can be detected at a time when it is symptomless and can be cured.

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ANTONIO SCARPA *

ANATOMIST AND SURGEON

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As the result of a long standing traditional sentiment and religious prejudice that dated back to the third century B. C., the practice of human dissection, as we know it today, did not start until sometime during the thirteenth century. The first undisturbed dissection of a human cadaver is believed to have been made at a medical school in the small city of Salerno in Southern Italy, which is said to have been the earliest university in Europe. From this modest beginning, dissection of the human cadaver spread to other medical schools, which by now were becoming numerous, especially in other Italian cities. Credit for this pioneer work in anatomy, therefore, the most important of all the medical sciences, goes to the Italian scientists, who from the revival of learning during the *risorgimento* showed no signs of a letdown until possibly about the middle of the nineteenth century.

Among the many heroes during this developmental period of medical education we find Antonio Scarpa, who born into a very poor family of tradespeople, nevertheless, took advantage of his opportunities to become one of the most celebrated, if not the most outstanding, anatomist and surgeon of his time. Scarpa was born on May 19, 1752 "at Lorenzaga in the commune of Motta di Livenza." He was the son of Giuseppe Scarpa who was of Venetian origin. Almost from the very beginning he came under the influence of an uncle, Don Paolo, who was a priest,

* Presented by invitation before the Tulane History of Medicine Society on December 4, 1953.

and who undertook his early education. His eagerness to learn enabled him to acquire an excellent preparation for college. Young Scarpa acquired an excellent knowledge of the classical languages, and actually became an expert in the use of Latin. He was extremely well grounded in mathematics, and attained an unusually excellent knowledge of literature and the arts. Through all the days of his early education he showed a particular inclination to study medicine. Accordingly, his uncle sent him to the University of Padua where, at the age of fifteen years he passed the entrance examinations in an incredibly easy and brilliant fashion.

During his student days he let no opportunity to increase his general knowledge escape his attention. Scarpa was especially fascinated by and seemingly magnetically attracted to all of the sciences, particularly those relating to the study of medicine. He spent considerable time in the study of botany and zoology, both of which were to serve him well later. While engaged in his studies on human anatomy he attracted the attention of Giovanni Battista Morgagni. The latter was so impressed by Scarpa that he made him his personal secretary, a position which afforded him an unusual opportunity to further his knowledge and to learn about as well as to meet many of the medical notables in the Europe of that day. His contact with the celebrated Morgagni imbued him with a greater desire to further his knowledge in anatomy. Although very old, almost blind and rather feeble, and actually feeling ill, Morgagni requested the privilege of personally presenting Scarpa's diploma when he graduated at the age of nineteen years.

Even during his student days Scarpa was already attracting the attention of other scientists not only in Padua but in other centers of education as well, and especially at the University of Bologna. In 1772, at the age of twenty, because of his important work on the structure of the internal ear and, too, because of a previous recommendation by Morgagni, Scarpa was offered the chair of anatomy at the University of Modena which he accepted. His investigations here, especially on the structure of ganglia and nerve plexuses, the results of which he published in 1779, continued to attract the attention of the scientific world. A short time after going to Modena he was made chief surgeon of the Military Hospital there. While at Modena, Scarpa, in spite of his responsibilities and a full schedule, still found time to help Michele Rosa in his experiments on the transfusion of blood.

In 1780, Duke Ercole III of Modena sent him on a mission to study the methods of teaching used in the French and English Schools. His Paris stay permitted him to renew the acquantances of the anatomist Vicq d'Azyr. He was permitted to work in the Charity hospital where he was able to devote much of his time to researches on the nasal nerves. He also assisted the best known French surgeons in their work and, especially Wenzel with his operation for the removal of cataracts. An opportunity to study an interesting case of aneurism on a cadaver resulted in important observations which he presented to the "Societé de Medicine."

In the autumn of 1781, Scarpa went to London where he worked with the celebrated Percival Pott and William and John Hunter. It was while working with William Hunter that Scarpa got the idea of establishing a real anatomical museum for teaching purposes. From John Hunter he learned the importance of extending his field of research to the dissection of animals. This experience gave him the impression that he could increase his knowledge of human anatomy by the study of comparative anatomy. Cruikshank, an assistant of William Hunter, and Shelton taught Scarpa the technic of injecting mercury. This he used in injecting lymphatic vessels, and he succeeded in obtaining some very fine preparations.

After an absence of two years he returned to resume his lectures at Modena. Shortly thereafter he received the offer of

the chair of anatomy and clinical and operative surgery at the University of Pavia which included a very substantial increase in salary. Accepting this offer in the fall of 1783, he started a relationship with the Medical School of the University of Pavia that was to last until he died. In 1784, he and Allessandro Volta, the renowned physicist, were sent on a lecture tour to the universities in Bohemia, Saxony, Prussia, Hanover, Brunswick, Bavaria, and the Tyrol, by the Emperor Joseph II who ordered that all their expenses be paid. Upon his return to Italy he determined that the School of Anatomy at the University of Pavia should be the finest in all Europe. On October 31, 1785, a new anatomical amphitheater was opened. An abundance of cadavers was made possible through an order from the Emperor. This gave access to material for numerous investigations and researches not only by the teachers themselves but by the students as well. Through the munificence of the Prince, and at Scarpa's suggestion, the students were permitted the use of the necessary instruments, materials for injections, microscopes and many other apparatuses, all of which helped to make the Medical School of Pavia the most outstanding during this time.

According to Monti, "the importance of Scarpa's contributions to anatomy, as related to the general progress of this science, can only be evaluated by the anatomists themselves." He played a very great part "in defining uncertain notions, in resolving controversies," and "in assuring us of an exact and clear documentation of obscure discoveries." Scarpa's "discoveries in the organ of hearing were truly fundamental not only from the point of view of the anatomy but also from that of physiology, comparative biology, and pathology as well." Scarpa used excellently made wax preparations to demonstrate anatomical structures."

In his dissections of the external, middle, and internal ear, Scarpa discovered structures which had never before been known. Dissection of analagous structures in the lower animal gave him a more vivid understanding of these structures. It was Scarpa who was the first to describe the secondary tympanic membrane and show its attachment to a slight prominence now known as the "spine of Scarpa." It was he who explained the transmission of sounds from the ear drum, through the ossicles of the middle ear, and then through the secondary tympanic membrane covering the fenestra rotunda of the osseous labyrinth, thus permitting communication of the ear drum with the scala tympanica of the cochlea.

Perhaps Scarpa's most brilliant anatomical discovery was that of the membranous labyrinth contained in the innermost recesses of the internal ear. It was this discovery which opened the door for the studies of Corti. The description given by Scarpa of the various structures making up the membranous labyrinth have given us a much more clear understanding of the sense of hearing. Scarpa was the first to demonstrate that the acoustic nerve divides into two distinct branches — the cochlea and vestibular nerves. He also described the ganglion of the "vestibular nerve of Scarpa" from which there come four branches that go to the utricle and the semicircular canals.

"Of classical and fundamental importance, too, were Scarpa's observations on the organ of smell." He was the first to describe the roots of the olfactory nerve from the brain, and the three grooves comprising the olfactory area. These he showed in an excellent fashion by demonstrating the olfactory bulb in a series of vertebrates starting with the fishes. He described the olfactory nerve branches passing through the little openings in the ethmoid bone to their distribution in the nasal mucosa. Scarpa was the first to discover the nasopalatine nerve (of Scarpa) and "the two little openings in the anterior part of the hard palate" through which the nasopalatine nerves pass and which are known as the foramina of Scarpa.

Scarpa paid considerable attention to

the ganglia of the central nervous system. He was able to demonstrate that the sensory nerves pass through the posterior roots and the motor nerves through the anterior roots. The great influence of Scarpa is again seen in our knowledge of the sympathetic nervous system. He was the first to demonstrate the plexus which is formed on the external carotid artery, and its branches, from the nerve filaments that leave the superior cervical ganglion. He was also the first to observe the sympathetic nerves that pass from the cervical nerve ganglia to the heart.

Morgagni "in his fundamental work on the seat and causes of diseases, also directed his attention to diseases of the eyes." This can be said to have been the beginning of the study of eye diseases on a more scientific basis. Certainly, Morgagni by his contribution "established an anatomical basis for the new science of ophthalmology." Although several surgeons in various countries were working along more scientific lines in their investigations on diseases of the eye, it was not until Scarpa wrote his book on this subject, in which he included his previous experiences and observations with Morgagni, as well as those of foreign writers, that ophthalmology was elevated to a more scientific level. This book immediately achieved a huge success. "It was translated into French, English and German, and became the classical text adopted by all the best known schools." This book opened new avenues that have resulted in great strides in ophthalmology. Some of the observations made by Scarpa in connection with his studies of eye diseases "have remained indissolubly bound to his name." Both "staphyloma of the cornea" and "posterior staphyloma of the sclera" were first described in his book by Scarpa. The book "had five editions in Italy, four in France, two in England and Germany and one in Holland."

To Scarpa belongs the credit for establishing the anatomic-pathologic basis in the practice of surgery. His investigations on congenital clubfoot culminated in his construction of an elastic apparatus which is capable of gradually straightening the foot. This apparatus in modified forms is not only in use today but its successful use was the signal for devising other apparatuses in the treatment of other infantile deformities. Scarpa's monograph on aneurisms, "based upon the comparative analysis of normal and pathological tissues" showed for the first time that an aneurism "is not a simple dilatation of an artery, but the result of a profound alteration in the vascular tunics." This contribution was the beginning of a scientific movement to study the diseases of the arteries. The concept of the collateral circulation, which was developed with so much brilliance through well arranged experiments by Porta, and the general pathology of which was explained by Cohnheim, "to whom less informed sources give credit for the discovery," belongs essentially to Scarpa, who was the first to make numerous observations on the cadaver and to run various experiments on animals.

Scarpa's extensive dissections of the inguinal and perineal regions, to get a better understanding of hernias in these areas, stimulated him to write a book on hernias. These dissections later served as the basis for the investigations of Bassini and Burci. His book on hernias "became very well-known immediately," and was "translated into many languages." It also brought him a prize of four thousand lire from Napoleon. Scarpa's studies on the regeneration of bone in fractures, the nature of exostoses, and the process of bone absorption attracted considerable attention among physiologists. Finally, no medical student today would dare ignore the boundaries or the contents of the "triangle of Scarpa."

This briefly presented sketch of Scarpa's contributions outlines the main problems in which this great investigator and indefatigable worker was interested. It tends to show the many fields in which he made important contributions. However, they do not by any means represent

all of his scientific medical and surgical interests. Among his many contributions to surgical pathology are his observations and experiences in the treatment of cancer. He asserted that "cancer begins as a local disease," and that the "opportune moment for operation" is when "the tumor is early and limited."

The time during which Scarpa was active in the affairs of the University of Pavia may well be designated as its "golden era." In addition to Scarpa, whose international reputation brought many students from many foreign countries, there were a number of other notables in the faculties of the various schools, including Alesandro Volta the physicist and Lazzaro Spallanzani the biologist.

Scarpa gave up teaching in 1813 after the death of Giuseppe Jacopi a favorite student whom he had chosen to be his scientific heir. However, he continued to retain the office of Director of the Medical Faculty until his death from "calculus nephritis" on October 31, 1832.

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THE PROBLEM OF MEDICAL LICENSURE IN RELATION TO GRADUATES OF FOREIGN MEDICAL SCHOOLS

The problem of medical licensure in relation to graduates of foreign medical schools has become one of acute concern in this country in recent years. The proper resolution of this problem bears on the fundamentals of human relationship and upon the responsibility of medicine to the public. Quoting Rappleye, "The purpose of medical licensure, like that of medical education, is to assure the public that those authorized to practice medicine are competent by establishing standards of education, evaluating the qualifications of candidates, and conducting examinations to test the knowledge and fitness of candidates. This public responsibility has been recognized in one form or another since the early beginnings of history. The appraisal of physicians to discharge their obligations to patients and the community has been accepted for centuries."

In the first decade of this century there was a struggle in this country on the part of the universities, the State governments, and the profession, to establish adequate levels of medical education, licensure, and practice. In a cooperative effort in which the American Medical Association, the State societies, the Association of American Medical Colleges, and the Federation of State Boards of Medical Examiners of the United States all participated, a remarkable degree of improvement was attained in the general level of training and qualifications for practice. It has been correctly stated that the evaluation of professional conduct, and hence, of personal qualifications of a physician, is an essential feature of the maintenance of high levels of medical practice.

The public feels that professional education shall have determined as far as possible the character, integrity, industry, resourcefulness, reliability, motivation, and personality of the person applying for medical licensure, as well as having provided an adequate intellectual preparation.

With these aims before us, and with some goals partially attained, we are now facing the establishment of double standards in practice brought about by the influx of large numbers of graduates of medical schools of foreign countries. These graduates have not been provided with the pattern of medical education regarded in this country as necessary. Varying conditions in medical schools scattered over the earth have resulted in a situation in which many of their graduates are inadequately trained. This has resulted from a lack of adequate secondary education, from a scarcity of laboratories, teaching personnel, and clinical instruc-

tion. Many of these graduates have appeared in this country as immigrants, displaced persons, foreign "students," seeking postgraduate training, and in some instances, American citizens who have sought medical training abroad. It appears from reports compiled from many sources appearing in the Bulletin of the Federation of State Medical Boards of the United States, in recent years, that it is impossible to evaluate the training and suitability of graduates of foreign medical schools on the basis of their credentials. Similar conclusions were expressed by Fishbein, who reported on a survey in Latin America in 1948. He stated that at the time of the survey two schools in Latin America were comparable in educational standards to those required in this country.

In spite of these deficiencies, it has been stated that one in four of all interns and residents in the hospitals of this country at the present time is an alien and the graduate of a foreign medical school. The majority of these will seek to remain in the country and secure a license to practice. Approximately one half of the States are allowing such applicants to take their examination. It is stated that the experience in the State of New York shows the extent of their deficiency. This can be judged by the fact that 60 to 80 per cent of the foreign applicants fail the examination, some as many as fourteen times. It is obvious that if such inadequately trained physicians are allowed to practice the general quality of medical service will deteriorate.

Another faucet of the problem of licensure of foreign graduates is presented in the case of those individuals who seek postgraduate training in the form of an internship or residency, and who ultimately intend to return to their country of origin. The duties of an intern and of a hospital resident are those of a physician practicing medicine, even though under supervision. Accordingly, it is unwise to allow hospital patients to be treated by physicians whose formal training does not give adequate promise that they are properly qualified.

In Louisiana, this matter in its several aspects has been presented to the House of Delegates of the Louisiana State Medical Society in 1946 and in 1954. It has been considered by the State Board of Medical Examiners of Louisiana over a number of years. The decision reached by both bodies is in accordance with the views expressed above, and is to the effect that under the Medical Practice Act of the State of Louisiana foreign graduates are not permitted to take the examinations. The obligation of the Louisiana State Medical Society, and of the licensing board is to the citizens of the State.

The alternative plan suggested in certain quarters of issuing limited licenses does not clarify the situation, but on the contrary, further complicates it. The establishment and maintenance of adequate standards of training before licensure has been accomplished with difficulty over a period of fifty years. Under lowered standards, the individual with limited license is not one who would confine himself to a limited practice. Also, if a foreign medical graduate were given a limited license, any individuals in the ancillary phases of medicine—such as psychologists, physiotherapists, laboratory technicians—would properly seek a similar privilege in practice.

In summary, it may be stated accordingly that while the problem of licensing the graduates of foreign medical schools is not of our own making, it is with us nevertheless. Except in most unusual instances, these graduates are improperly trained and should not receive a license to practice. State Boards who are upholding the standards of practice are to be commended. This is particularly true so far as the physicians of Louisiana are concerned in regard to the Louisiana State Board of Medical Examiners.

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ORGANIZATION SECTION

The Executive Committee dedicates this section to the members of the Louisiana State Medical Society, feeling that a proper discussion of salient issues will contribute to the understanding and fortification of our Society.

An informed profession should be a wise one.

ABSTRACTED MINUTES HOUSE OF DELEGATES

May 20-22, 1954

Minutes of the 1953 meeting of *House of Delegates* approved as recorded.

Minutes of meetings of *Executive Committee since 1953 meeting* of House of Delegates approved as recorded.

Special Order

Appointment of Committees: *Credentials*:—Dr. C. E. Boyd, Shreveport, Chairman; Dr. Richard L. Buck, New Orleans, Dr. J. Morgan Lyons, New Orleans. *President's Report*:—Dr. J. Kelly Stone, New Orleans, Chairman; Dr. E. H. Lawson, New Orleans, Dr. Felix Planche, New Orleans. *Resolutions*:—Dr. M. C. Wiginton, Hammond, Chairman; Dr. J. E. Clayton, Norco, Dr. R. E. Gillaspie, New Orleans.

Introduction and recognition of new members of the House of Delegates.

Roll of members who died since 1953 meeting read.

Presentation of *plaque to Dr. Roy B. Harrison*, honoring his long service to the medical profession. Dr. Harrison unable to be present due to illness and Drs. McMahon and Cole appointed to deliver plaque to him.

Greetings from *Dr. Walter B. Martin*, President-elect of AMA.

Greetings from representatives of the *Woman's Auxiliary*: Mrs. M. C. Wiginton, President, Louisiana State Auxiliary; Mrs. George D. Feldner, President, Southern Medical Association Auxiliary; Mrs. George Turner, President-elect, American Medical Association.

Communications

Rapides Parish Medical Society in re *Basic Science Law*: House of Delegates went on record as being opposed to passage of a Basic Science Law.

Rapides Parish Medical Society in re *election of president of the Society*: Matter referred to Council.

Director of Washington office of AMA requesting members of House to contact members of Ways and Means Committee in re consideration of vote forcing physicians under *Social Security*:—Secretary reported telegrams sent to members of the committee considering this matter and to all Louisiana members of the U. S. Senate and House of Representatives. Money for telegrams to be sent from individual members of the House collected.

Continental Casualty Company in re *enrollment campaign for health and accident insurance*:—Received and filed.

Louisiana Division of American Cancer Society in re *opposition to chiropractor bill*:—Read and filed.

Governor Kennon in re *opposition to chiropractic bill* (written prior to his election.) Read and filed.

Action Taken

Recommendations contained in *resolution concerning charges for hospital* and *professional services* acted upon as follows: 1. The Louisiana State Medical Society affirm the action of the American Medical Association defining these medical services and condemning their being classified as hospital services in any contract offered for sale in Louisiana—Approved. 2. The President of this society be requested to appoint a committee whose function shall be to negotiate with the Hospital Service Associations (Blue Cross) and other companies offering similar insurance, to have these services of pathology, radiology and anesthesiology specified as professional services in all contracts—Referred to Committee on Committees.

Approval of $195.00 *appropriation to Woman's Auxiliary* for use in connection with *Nurse Recruitment Project* upon recommendation of Budget and Finance Committee.

Suggested *telegram and resolution* in re *chiropractor bill for submission to Louisiana Legislators* approved; to be used in accordance with instructions of Committee on Public Policy and Legislation and Executive Committee; suggestion made that these be submitted to Public Relations Agency employed by Committee on Public Policy and Legislation.

Approval of following changes in the *Anatomical Act*:—1. In Section 3.: Insert at beginning: "For the purposes of this Act an unclaimed body is one which would have to be buried at public expense because deceased has left no property to defray cost of interment and no relatives or friends claim and take charge of the body for burial without expense to the public". (This sentence is based on an opinion written by the Office of the Attorney General). 2. Also in Section 3: Before the sentence starting "The Board or its duly authorized agents . . . ": "All of the above named officials are granted authority to release such unclaimed bodies to the Board. The superintendents, directors and wardens of the institutions maintained by the State of Louisiana, moreover, are required to release such unclaimed bodies to the Board, at the

direction of the coroner of the Parish in which the unclaimed body is held."

Special committee, composed of Dr. E. L. Leckert, Dr. C. Grenes Cole and Dr. P. H. Jones, appointed to *review the Charter, Constitution* and *By-Laws and have them printed, as corrected.*

Increase in renewal fee to Louisiana State Board of Medical Examiners from five to ten dollars, approved.

President to appoint a *committee to study question of malpractice insurance rates;* committee to report to next meeting of Executive Committee for action.

Increase in *retainer fee for Attorney employed by Society*, to $2,500.00 a year, subject to approval of the Committee on Budget and Finance Committee, approved.

Amendments

Section 4 of Article IV of Constitution in re *Inactive Membership* to add "Also members who become permanently or temporarily incapacitated or of advanced age with limited practice, if such membership is requested and is approved by the Executive Committee."—Approved; final vote on amendment to be taken at 1955 Annual Session.

Section 1 of Chapter XI of By-Laws in re *dues and appropriations* — to increase dues for active members to $35.00, two dollars of the amount collected from active members to be appropriated to the Committee on Public Policy and Legislation.—Approved.

Reports without Recommendations

Following reports accepted as printed: Secretary-Treasurer; Councilors of First, Second, Third, Fourth, Fifth, Sixth, Seventh and Eighth Districts; Committees: Advisory to Selective Service, Aid to Indigent Members, Arrangements — 1954 Annual Meeting, Blood Banks, Budget and Finance, Chronic Diseases, Committees, Congressional Matters, Domicile, History of Medicine in Louisiana, Industrial Health, Journal, Lectures for Colored Physicians, Liaison with Louisiana State Nurses' Association, Maternal Welfare, Mediation, Medical Defense, Medical Education, Medical Indigency, Medical Testimony, National Emergency Medical Service, Neuropsychiatric Service at Charity Hospitals, Public Policy and Legislation, Scientific Work, Second District Medical Society and Orleans Parish Medical Society, State Hospital Policies, Woman's Auxiliary; Council on Medical Service and Public Relations.

Report of Committee on Diabetes: in re statement "the Committee on Diabetes has had no matters referred to it . . . ", motion made, seconded and carried that the Committee on Diabetes be instructed to initiate matters pertaining to diabetes instead of waiting to have matters referred to it; the Committee to be so informed.

Report of Committee on Journal — Chairman called attention to the fact mentioned in report that the Secretary-Treasurer had been appointed by Board of Trustees of the AMA to fill unexpired term of Dr. Julian Price on Advisory Committee of the State Journal Advertising Bureau and congratulated Dr. Cole on behalf of the House.

Reports with Recommendations

President: Referred to Committee on President's Report and report of this Committee in which it was recommended that all recommendations in the original and supplemental reports of the President be adopted in principle and that in re recommendation No. 6 of the supplemental report, percentage of the Board of Governors of Charity Hospital of Louisiana at New Orleans, be determined by the House of Delegates, was accepted and the following action taken on these recommendations: *Original Report*—1. Consideration to be given to increase in dues—Increase approved; Budget and Finance Committee asked to make recommendations in re amount of dues and amount to be appropriated to Committee on Public Policy and Legislation; amendment to By-Laws to conform. Following recommendation of Committee on Budget and Finance approved: Dues for active members increased to $35.00 per year; appropriation for Committee on Public Policy and Legislation increased to $2.00 per year. 2. House of Delegates endorse efforts of legal advisor of Society to have a law passed which will return to previous status the statute of limitations for malpractice suits from ten years to one year—Approved. 3. Uniform insurance blank be endorsed by House of Delegates; its establishment by Legislative Act be sought—Approved. 4. Discussion by House of continued need for public relations consultants with view to having a committee appointed to study problem and report to next meeting of Society—Approved. 5. Plans for place of annual meetings be made several years in advance — Approved. 6. Request constituent societies to devote one meeting each year to discussion and consideration of cost of malpractice insurance and recently manifested tendency of juries to give greatly increased damages in connection with suits. — Approved. 7. Request each constituent society to appoint a School Health Committee and the whole Society cooperate with the School Health Program—Approved. 8. Request local societies to continue special committees for handling the educational campaign in connection with the chiropractor problem —Approved.

Supplemental Report:—1. House of Delegates go on record as recommending that there should be no changes in the Medical Practice Act of the State of Louisiana—Approved. 2. House of Delegates go on record as being opposed to any Bill for the certification of psychologists—Approved. 3. House of Delegates go on record as to whether it does or does not wish to support the certification of physiotherapists — Approved (Recommendation of Committee on Public Policy and Legislation that

efforts of bona-fide physiotherapists to secure license be endorsed — rejected). 4. AMA be petitioned to consider and promote malpractice insurance for its members—Approved. 5. AMA be requested to continue study of problems of intern training; further consideration be given to resolution sent in June 1953 to the House of Delegates on this subject; House approve sending of copy of this resolution to other State Societies—Approved. 6. House of Delegates approve a Bill to be presented at the State Legislature that the Board of Governors of the Charity Hospital of Louisiana at New Orleans be an overlapping Board and be composed of 50% or more of doctors of medicine engaged in the practice of medicine—Approved.

Committee on American Medical Education Foundation:—1. Report of this Committee, with report of 1952-1953 Committee on American Medical Education Foundation, be referred to Committee appointed for 1954-1955—Approved. 2. Fewer members be appointed to serve on this Committee for 1954-1955—Referred to Committee on Committees.

Committee on Cancer:—1. Idea of developing a Cancer Commission of the State Society which would include official representation on the part of other organizations be abandoned—Approved. 2. Cancer Commission of the Louisiana State Medical Society, composed entirely of members of the Society be created and so designated to replace in name rather than in purpose and functions, the Cancer Committee of the Louisiana State Medical Society; membership and mode of operation of such Commission follow the suggested resolutions included in report of Committee — Approved. 3. Sum of $1,000.00 be budgeted and made available to permit implementation of at least some of the purposes of the Cancer Committee or Cancer Commission—Referred to Committee on Budget and Finance.

Committee on Child Health:—1. Legislature at 1954 session be requested to allocate funds for Louisiana Evaluation Center for exceptional children which was created at last session of Legislature—Approved. 2. Fluoridation of water supply be endorsed by State Society in accordance with endorsement by AMA—Approved. 3. Committee on Child Health be made a permanent committee of State Society—Referred to Committee on Committees.

Committee on Federal Medical Services: — 1. House of Delegates concur with recommendations of House of Delegates of AMA and Secretary of this Society be instructed to inform AMA of this action—Approved. 2. Presidents of various Parish and District medical Societies in Louisiana appoint committees at once to further the cause of the AMA in this problem, reporting their action and progress to Secretary of this Society—Approved.

Committee on Hospitals: — 1. The Louisiana State Medical Society give favorable consideration and action to the suggestion that all hospitals in the state organize a general practice department; and that the department be given a place of representation on the medical governing board of that hospital.—Motion made and carried that the recommendation terminate after " . . . a general practice department", changing the semi-colon to a period.

Committee on Public Health of the State of Louisiana: — 1. Endorsement of introduction of legislation designed to control rabies in Louisiana and apprize the Governor and Legislature of this endorsement—Approved.

Committee on Public Policy and Legislation (Supplemental Report):—1. Committee on Public Policy and Legislation be merged with Committee (Council) on Public Relations; this committee be given a budget ample to implement a sound, year-round public relations program in Louisiana—Referred to Committee on Budget and Finance and Committee on Committees. Recommendation of these committees that this recommendation of the Committee on Public Policy and Legislation be rejected because, due to diversity of duties designated to the Committee on Public Policy and the Council on Medical Service and Public Relations, such a combination would not serve the best interest of the Society, was approved. 2. State Society endorse efforts of the bona-fide physiotherapists for licensure and work toward that end.—Rejected. 3. Society foster creation of an official, non-medical commission to evaluate chiropractic and recommend appropriate legislation—Approved; referred to Executive Committee.

Committee on Resolutions: — 1. Copy of these resolutions be sent to each person and organization mentioned and also published in The Journal of The Louisiana State Medical Society — Approved.

Committee on Rural and Urban Health: — 1. Committee on Rural and Urban Health be continued — Referred to Committee on Committees. 2. One thousand dollars ($1,000.00) be appropriated for use of this Committee—Referred to Committee on Budget and Finance. 3. Officers and members of State Society take a more active part in Health Council work—Approved.

Report of Louisiana State Board of Medical Examiners

Report accepted—Dr. Rhett McMahon and Dr. E. L. Leckert, with Dr. Henry W. Jolly, Jr., and Dr. Sam Hobson, as alternates, to be recommended to the Governor for appointment to the Board of Medical Examiners in re expired terms of Drs. McMahon and Leon J. Menville.

Election of Officers, Delegate and Alternate to AMA and Committees

President-elect—Dr. Max M. Green, New Orleans.

First Vice-President—Dr. Henry W. Jolly, Jr., Baton Rouge.

Second Vice-President—Dr. George H. Hauser, New Orleans.

Third Vice-President—Dr. W. A. K. Seale, Sulphur.

Chairman, House of Delegates—Dr. W. Robyn Hardy, New Orleans.

Vice-Chairman, House of Delegates—Dr. Ralph H. Riggs, Shreveport.

Councilor, First District—Dr. H. Ashton Thomas, New Orleans.

Councilor, Second District—Dr. J. E. Clayton, Norco.

Councilor, Fourth District—Dr. Paul D. Abramson, Shreveport.

Councilor, Fifth District—Dr. C. Prentice Gray, Jr., Monroe.

Delegate to AMA (1955 and 1956)—Dr. P. H. Jones, New Orleans.

Alternate to Delegate to AMA (1955 and 1956)—Dr. Charles B. Odom, New Orleans.

Committee on Committees — Dr. E. L. Leckert, New Orleans—Chairman; Dr. J. Kelly Stone, New Orleans, Dr. W. E. Barker, Jr., Plaquemine.

Committee on Journal—Dr. Charles M. Horton, Franklin.

Committee on Medical Defense—Dr. C. B. Erickson, Shreveport, Chairman.

Committee in Public Policy and Legislation—Dr. C. E. Boyd, Shreveport, Chairman; Dr. E. L. Zander, New Orleans, Dr. J. E. Clayton, Norco, Dr. Leo J. Kerne, Thibodaux, Dr. Haydn Cutler, Monroe, Dr. H. W. Jolly, Jr., Baton Rouge, Dr. W. A. K. Seale, Sulphur, Dr. M. B. Pearce, Alexandria.

Committee on Scientific Work—Dr. C. Grenes Cole (Secretary-Treasurer), New Orleans, Chairman; Dr. Sam Hobson, New Orleans, Dr. M. D. Hargrove, Shreveport.

Future Annual Meetings

Dates and places:—1955—New Orleans; 1956—Alexandria; 1957—New Orleans; 1958—Shreveport; 1959—New Orleans; 1960—not selected; 1961—New Orleans. First three days of week to be designated whenever possible.

REPORT OF COMMITTEE ON MEDICAL DEFENSE

Since submitting a report of this Committee in 1953 six requests for defense in connection with malpractice suits have been referred to the Committee. It was agreed that each should be defended and material in connection with the cases was referred to the attorney of the State Society. At this time action is pending in all of these cases.

During the past year one old case was terminated by order of the court because no action had been taken by the claimant in a period of five years.

In another old case, a compromise settlement was recommended by the attorney for the Society, approved by the Committee and accepted by the defendant. The following comment by the attorney concerning this case seems quite pertinent: "This type of case illustrates most forcefully the necessity of doctors, and in particular surgeons, obtaining written consent. Obtaining such consent should be absolutely mandatory in a surgical procedure involving such serious consequences as sterilization."

One case pending from last year was recently tried in Federal Court in Ruston and a judgment for $64,000.00 was awarded the plaintiff, again on the claim that the operation had not been authorized.

C. B. ERICKSON, M. D., Chairman

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REPORT OF COMMITTEE ON RESOLUTIONS

It is felt by the Committee on Resolutions that the 1954 Annual Meeting of the Louisiana State Medical Society held in New Orleans, May 20-22, has been an outstanding one and that this has been the result of efforts, cooperation and assistance of many individuals, groups and business firms.

Several months ago, Dr. William H. Roeling was appointed by the President of the Orleans Parish Medical Society to serve as General Chairman for this Meeting. Dr. Roeling gave much time and thought to making plans for this meeting and it was indeed a tremendous shock to the officers of the Society, members who served on his sub-committees and personnel of the Secretary's office when he became acutely ill two weeks ago and passed away on last Friday. His interest in this meeting was keenly displayed and his absence has been felt by all in attendance.

THEREFORE, BE IT RESOLVED, that this House of Delegates rise at this time in tribute to this beloved member,

BE IT FURTHER RESOLVED that the Society express appreciation for assistance rendered by the following:

Dr. J. Theo Brierre, who has served as Chairman of the Committee on Arrangements since the death of Dr. Roeling,—and to personnel of all sub-committees on Arrangements.

All members of the Orleans Parish Medical Society—hosts to the meeting.

Rev. Father Carl Schutten, who delivered the invocation at the opening meeting of the Society.

Hon. James E. Fitzmorris, Jr., for words of welcome on behalf of the City of New Orleans.

Dr. Walter B. Martin, President-elect of the A.M.A. who served as annual orator for the meeting.

Dr. J. O. Weilbaecher and Dr. C. L. Brown, for expressions of welcome on behalf of Orleans Parish Medical Society and New Orleans Graduate Medical Assembly.

The following out-of-state guests who participated in the scientific program:
Dr. Houck E. Bolton, Philadelphia, Pennsylvania; Dr. James N. Etteldorf, Memphis, Tennessee; Dr. S .W. Hawkins, Fort Smith, Arkansas; Dr. Powhatan W. James, Houston, Texas; Dr. William Likoff, Philadelphia, Pennsylvania; Dr. Arthur Merrill, Atlanta, Georgia; Dr. John W. Middleton, Galveston, Texas; Dr. Lewis J. Moorman, Oklahoma City, Oklahoma; Dr. James L. Royals, Jackson, Mississippi.

Members of the Society who participated in the scientific program.

The Times-Picayune, New Orleans States and New Orleans Item and newspapers throughout the state for news releases.

Scientific exhibitors.

Technical exhibitors.

Advertisers in the program.

The Roosevelt Hotel, headquarters for the meeting, for excellent cooperation in handling hotel accommodations for members and guests and furnishing all requirements for scientific, business and social phases of the meeting.

Other hotels in New Orleans for accommodations furnished members.

Dr. Edwin H. Lawson, Secretary, Louisiana State Board of Medical Examiners, for his comprehensive report submitted to the House of Delegates.

Dr. P. H. Jones, President of the Society.

Dr. C. Grenes Cole, Secretary-Treasurer.

Miss Annie Mae Shoemaker, Assistant Secretary-Treasurer, and the entire secretarial staff for assistance prior to and during the meeting.

Mrs. Edwin A. Socola, President, Woman's Auxiliary;—Mrs. Paul G. Lacroix and Mrs. Aynaud Hebert—Chairman of Arrangements for the Auxiliary Meeting.

Expressions of gratitude are also extended to Governor Robert F. Kennon for his continued cooperation in medical matters of interest to the members of the State Society during the past year.

RECOMMENDATION

1. It is recommended that a copy of these resolutions be sent to each person and organization mentioned and also published in The Journal of the Louisiana State Medical Society.

Respectfully submitted,

SIGNED: J. E. Clayton, M. D.
R. E. Gillaspie, M. D.
M. C. Wiginton, M. D.
Chairman

MEDICAL NEWS SECTION

CALENDAR

PARISH AND DISTRICT MEDICAL SOCIETY MEETINGS

Society	Date	Place
Calcasieu	Fourth Tuesday every other month	Lake Charles
East Baton Rouge	Second Tuesday of every month	Baton Rouge
Morehouse	Third Thursday of every month	Bastrop
Natchitoches	Second Tuesday of every month	
Orleans	Second Monday of every month	New Orleans
Ouachita	First Thursday of every month	Monroe
Rapides	First Monday of every month	Alexandria
Sabine	First Wednesday of every month	
Second District	Third Thursday of every month	
Shreveport	First Tuesday of every month	Shreveport
Vernon	First Thursday of every month	

EIGHTEENTH ANNUAL MEETING NEW ORLEANS GRADUATE MEDICAL ASSEMBLY

The eighteenth annual meeting of The New Orleans Graduate Medical Assembly will be held March 7-10, 1955, headquarters at the Municipal Auditorium.

The following officers and members of the Executive Committee have been elected for this year:

Dr. W. D. Beacham, President

Dr. Donovan C. Browne, President-elect

Dr. Charles L. Brown, First Vice-President

Dr. James D. Rives, Second Vice-President

Dr. Willoughby E. Kittredge, Third Vice-President

Dr. Maurice E. St. Martin, Secretary

Dr. Jules Myron Davidson, Treasurer

Dr. Eugene H. Countiss, Director of Program

Dr. Boni J. DeLaureal, Assistant Director of Program

Dr. Richard W. Vincent, Assistant Director of Program

Executive Committee: Dr. Andrew V. Friedrichs (retiring President), Dr. Cuthbert J. Brown,

Dr. Barrett Kennedy, Dr. Ambrose H. Storck, and Dr. Charles R. Walters.

ANNUAL CONFERENCE OF THE AMERICAN OCCUPATIONAL THERAPY ASSOCIATION

The 37th Annual Conference of the American Occupational Therapy Association will be held at the Shoreham Hotel, Washington, D. C., October 16-22, 1954. The meetings will be as follows:

October 16-17	Preliminary Meetings
October 18-19	Institute—Interpersonal Relations
October 20-21-22	General Conference—Theme: "Capitalize Your Assets"

ANNUAL ASSEMBLY IN OTOLARYNGOLOGY

The Department of Otolaryngology, University of Illinois College of Medicine, announces its Annual Assembly in Otolaryngology from September 6 to 11, 1954. The entire week will be devoted to surgical anatomy and cadaver dissection of the head and neck, and histopathology of the ear, nose and throat. The Assembly will be under the direction of Maurice F. Snitman, M. D.

Registration will be limited. For information write to the Department of Otolaryngology, University of Illinois College of Medicine, 1853 West Polk Street, Chicago 12, Illinois.

ACTH AND CORTISONE SAVE Rh BABIES, PHYSICIAN REPORTS

CHICAGO—ACTH and cortisone keep most Rh-menaced babies alive until birth, Dr. Oscar B. Hunter, Jr., M. D., of Washington told the American Association of Blood Banks in Chicago.

The treatment has cut the mortality rate of babies born alive from 10% to 2%, and the incidence of still births from 17% to 3% in cases of mothers who had lost babies previously.

The Rh factor is an antigen found in the red blood cells of 85% of people in the United States. The remaining 15% lack it. When Rh-positive blood is introduced into the circulation of an Rh-negative woman, she produces an antibody against the invading substance.

POLIO POINTERS FOR PARENTS—1954

About the trial vaccine . . .

A safe and promising polio vaccine is now being tested for effectiveness in preventing paralytic polio. Hundreds of thousands of children in the primary grades are taking part in the tests. All the vaccine available is being used in this field trial so that *there will be none of it for anyone else this year.*

Only children in areas selected by State Public Health Officers and the National Foundation for Infantile Paralysis could be included in the tests. Not all of them are receiving the vaccine, but the health records of all these children are necessary to prove the value of the vaccine.

During the 1954 polio season, all polio cases occurring among children selected for the test—both those who received the vaccine and those who did not—will be carefully studied. A comparison should show whether children who received the vaccine actually were protected when polio came to their neighborhood. The final results will not be known until sometime in 1955. Until scientists declare this vaccine to be effective, it will not be produced for general use.

About Gamma Globulin (GG) . . .

The National Foundation for Infantile Paralysis has purchased $19,000,000 worth of gamma globulin. All of it has been turned over to the Office of Defense Mobilization of the federal government.

Most of the GG has been earmarked to provide polio protection for nearly two million children and for pregnant women. Gamma globulin, which is not a vaccine, provides protection for five weeks, only if given before exposure to the disease. For this reason it is effective for groups and communities in which polio is occurring, when given to those persons who might be exposed. GG offers no protection to members of families where the disease is already present.

GG will be distributed only to State and Territorial Health Officers who will decide when, where and to what groups it will be given.

GG also is effective for prevention of measles and infectious hepatitis. It will continue to be available for these purposes.

About precautions . . .

Until an effective vaccine is available for general use, we must continue to expect epidemics of polio. Here is what you can do if polio comes to your community.

1. Keep children with their usual companions; don't take them in crowds.
2. Avoid fatigue and chilling. This means adults, too.
3. Follow your doctor's advice about mouth and throat operations.
4. Teach children to wash hands carefully before eating and after going to the toilet. Don't use another's soiled towels, dishes or tableware.
5. Tell your doctor if these symptoms appear: headache, fever, sore throat, upset stomach, stiff neck or back. Put sick person to bed promptly.
6. Remember—at least half of all polio patients get well without any crippling.
7. Get in touch with your local Chapter of the National Foundation for Infantile Paralysis if you need help for a polio patient.

Small pamphlets including this information to mail to your patients or to place in your waiting room, may be obtained from The National Foundation for Infantile Paralysis, Inc., 448 Lee Circle Building, 1040 St. Charles Avenue, New Orleans, La.

BOOK REVIEWS

The Fight Against Tuberculosis; An Autobiography by Francis Marion Pottenger. Henry Schuman, New York, 1952. pp. 276, Price $4.00.

This is an account of the life of one of the first specialists in the diagnosis and treatment of tuberculosis. Told almost as a series of anecdotes detailing the years of his growth and development, it gives a large measure of insight into the character of one of the pioneers in the organized fight against tuberculosis in this country. Dr. Pottenger's interest in tuberculosis was awakened when his wife became sick of tuberculosis and finally succumbed to the malady, a not uncommon fate for those days. Determined to learn more about this illness which at that time baffled the best medical minds and carried with it an almost hopeless prognosis, he plunged himself into a lifetime of study with this as his chief objective.

How he fared during these years is an interesting story. In it are encountered many of the great persons on the medical scene of the last portions of the nineteenth century and the first half of the twentieth. Prominent individuals in many other walks of life are also mentioned briefly. Through it all, one sees portrayed the tremendously enheartening panorama of man's life-long struggle and twentieth-century conquest of tuberculosis.

Those who are interested in biography will find this a good character study. Others will see in this warmly human and personal account of the great struggle against the "White Plague" a message of hope. Dr. Pottenger's variety of interests will appeal to a wide reading public.

SYDNEY JACOBS, M. D.

Introduction to Physiological Optics; by Armin von Tschermak-Seysenegg. Translated by Paul Boeder, Springfield, Illinois, Charles C. Thomas, 1952, Pp. 299, Price $10.50.

This important volume in the field of physiological optics has been made available in English through the translation by Dr. Paul Boeder, and was sponsored by the American Committee on Optics and Visual Physiology of the Section on Ophthalmology of the American Medical Association in conjunction with the American Ophthalmological Society and the Academy. As Burian points out in the prefatory note, there is little available which fully treats the visual act, and this volume, now that it has been translated, is a welcomed addition. The six chapters present in a very clear and readily understandable manner such topics as the optical image, light sense, color sense, uniocular space sense, binocular space sense and ocular movements. In these days when the problems of binocular single vision are receiving greater attention than ever before and when the clinical significance of aniseikonia is being considered, the chapters on uniocular and binocular space sense are of particular interest. Such topics as the Horopter, Panum's area, corresponding points and stereopsis, are presented in such a manner as to give an excellent background for the reading and study of some of the more recent (such as the volume on Binocular Vision by Ogle) contributions to this very important portion of the field of visual science. As a conclusion to the chapter dealing with single and double vision, retinal correspondence, the Horopter problem, stereoscopic cooperation of disparate retinal elements and visual localization, Tschermak wrote: "All these results which could be treated here only by way of introduction, represent merely the first promising part and not the conclusion of a fully satisfactory theory of the visual spatial sense. Its further development or its completion will require, for a long time to come, 'the effort of the noble'."

CHARLES SHEARD, Ph. D.

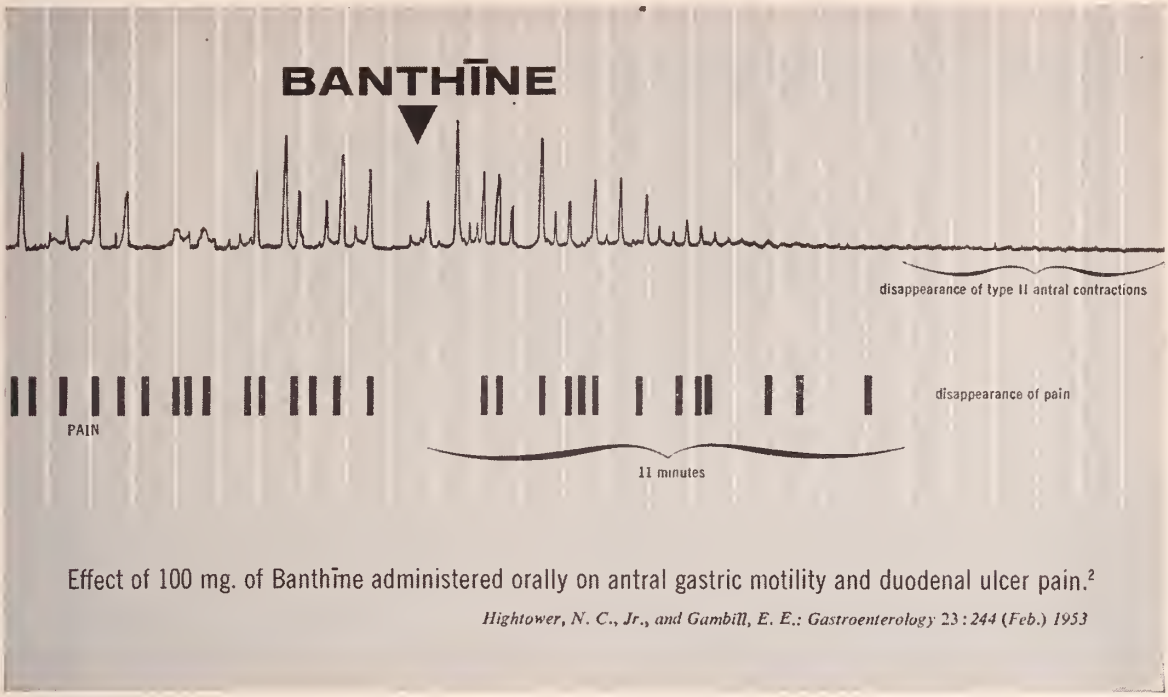
Clinical Diagnosis by Laboratory Methods; by James Campbell Todd, Arthur Hawley Sanford, and Benjamin B. Wells, 12th. ed., Philadelphia, Pennsylvania. W. B. Saunders Co., 1953, Pp. 998, 946 illus., Price $8.50.

"Todd and Sanford," that old reliable of the medical laboratory, has come forth in a new, twelfth edition. The joint effort of Doctors Arthur H. Sanford and Benjamin B. Wells, this latest version of a distinguished volume conforms in every way to the high standard of merit established more than forty years ago by the original senior author, the late Dr. James C. Todd, with whom Dr. Sanford was associated as co-author of several previous editions. The name of Benjamin Wells is a respected one both in internal medicine and in clinical pathology. To his training and experience as a physician Dr. Wells several years ago added that of a biochemist, earning from the Mayo Foundation the Ph. D. in this field. That this combination was, and is, a most happy one is evident, for example, in the sections of the book dealing with clinical chemistry. These, like the edition throughout, have been brought up to date.

The 12th edition indicates that the team of Sanford and Wells is an effective one and that we can expect them to carry on a great tradition in good medical literature. Dr. Sanford, for many years Professor of Clinical Pathology of the Mayo Foundation, himself requires no introduction to either pathologists or the medical profession at large.

The internal arrangements, typography and illustrations of this book are extremely well handled. Clinical pathologists and teachers of medical technology will need no urging to add this new 12th edition to their working libraries. To the medical profession in general it is unhesitatingly recommended as essential to all who have more than a casual interest in clinical laboratory procedures and diagnosis.

J. W. DAVENPORT, Jr., M. D.



Effect of 100 mg. of Banthine administered orally on antral gastric motility and duodenal ulcer pain.[2]

Hightower, N. C., Jr., and Gambill, E. E.: Gastroenterology 23:244 (Feb.) 1953

Banthīne® Reduces Hypermotility and Hyperacidity in Peptic Ulcer

A recent evaluation of anticholinergic therapy in peptic ulcer emphasizes the fact that now the profession has at its disposal agents that are "effective in reducing both secretory and motor activity of the stomach."

The effect on motor activity is generally more pronounced and less variable than on secretion; pain relief is usually prompt; a high degree of effectiveness is noted in ambulatory ulcer patients.

Ruffin, J. M.; Texter, E. C., Jr.; Carter, D. D., and Baylin, G. J.: J.A.M.A. 153:1159 (Nov. 28) 1953.

With its proved anticholinergic effectiveness, Banthine has been found extremely useful in the medical management of active peptic ulcer, whether duodenal, gastric or marginal.

The immediate increase in subjective well-being and the simplicity of the Banthine regimen assures patient cooperation. The recommended initial therapeutic dose is 50 or 100 mg. (one or two tablets) every six hours around the clock, with subsequent individual adjustment. The usual measures of diet regulation, rest and relaxation should be followed.

Banthine is effective in other conditions caused by excess parasympathetic stimulation. These include hypertrophic gastritis, acute and chronic pancreatitis, biliary dyskinesia and hyperhidrosis. Banthine is contraindicated in the presence of glaucoma and should be used with caution in the presence of severe cardiac disease or prostatic hypertrophy.

Banthine® bromide (brand of methantheline bromide) is supplied in scored tablets of 50 mg. and in ampuls of 50 mg. It is accepted by the Council on Pharmacy and Chemistry of the American Medical Association. G. D. Searle & Co., Research in the Service of Medicine.



who have seborrheic dermatitis of the scalp

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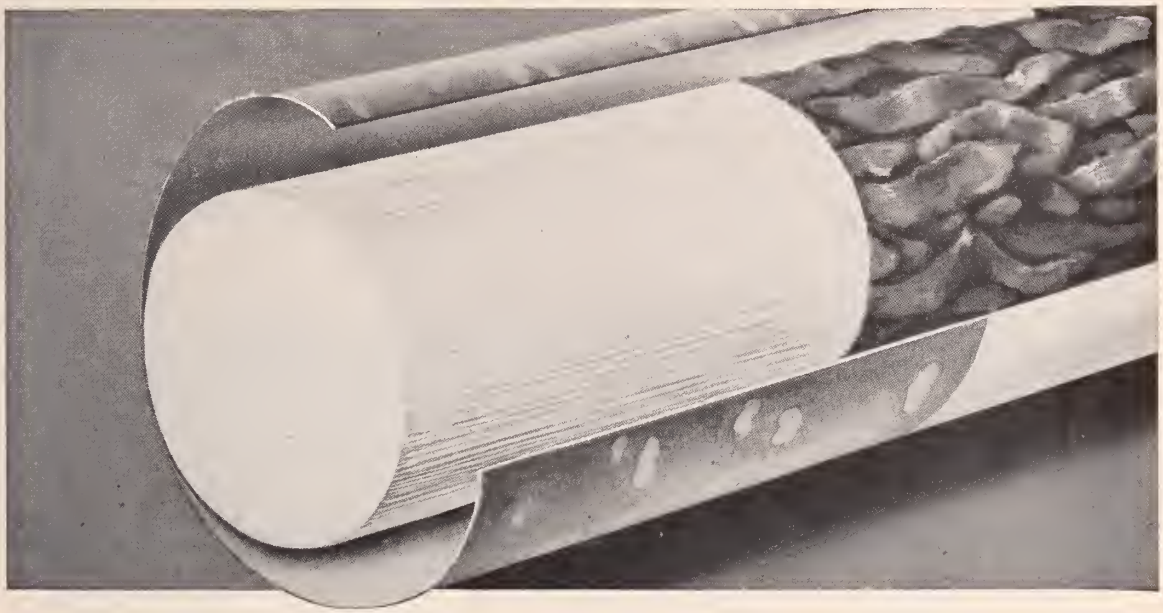
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1-348-54

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	Vestibular damage % of patients		
	Mild	*Moderate*	*Total*
Streptomycin	12	6	18
Dihydrostreptomycin	6	0	6
Distrycin	0	0	0

	Cochlear damage % of patients		
	Mild	*Moderate*	*Total*
Streptomycin	0	0	0
Dihydrostreptomycin	12	3	15
Distrycin	0	0	0

**Heck, W.E.; Lynch, W.J., and Graves, H.L.: Acta oto-laryng. 43:416, 1953.*

Distrycin dosage is the same as for streptomycin. In tuberculosis the routine dose is 1 Gm. twice weekly, in conjunction with daily para-aminosalicylic acid or Nydrazid (isoniazid). In the more serious forms of tuberculosis, Distrycin may be given daily, at least until the infection has been brought under control.

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1. Greenblatt, R. B., and Kupperman, H. S.: M. Clin. North America *30*:576 (May) 1946. 2. McGavack, T. H., in Goldzieher, M. A., and Goldzieher, J. W.: Endocrine Treatment in General Practice, New York, Springer Publishing Company, Inc., 1953, p. 225.

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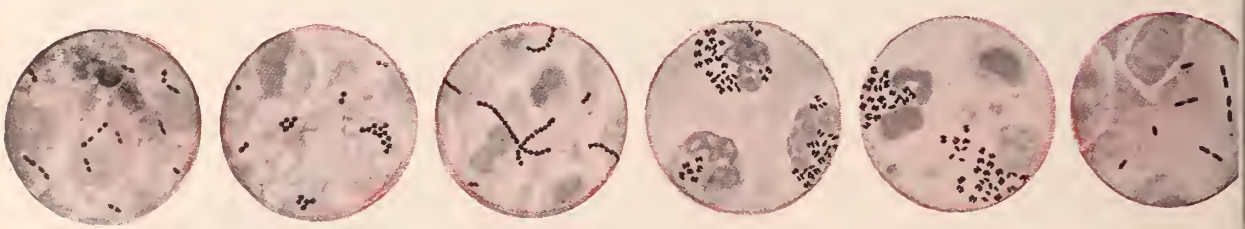
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Reporting on work accomplished since the Registry was reorganized in June of last year, the Director has presented the following figures after noting that all cases diagnosed prior to January 1, 1948 were discarded as well as certain benign cases.

12,193 records were reviewed on backlog cases
4,444 cases were thrown out of the Registry
8,741 cases from January 1, 1948 through December 1953 were abstracted
122 cases from January 1, 1948 through December 1953 pending review

From the above figures the volume of cases is as follows:

8,863 cases for five years—January 1948 to December 1953.

A recent tabulation of a total of 9236 cases abstracted, coded and recorded shows the following geographic distribution:

Out of state — 20 cases
New Orleans — 3788 cases
Balance of state — 5428 cases

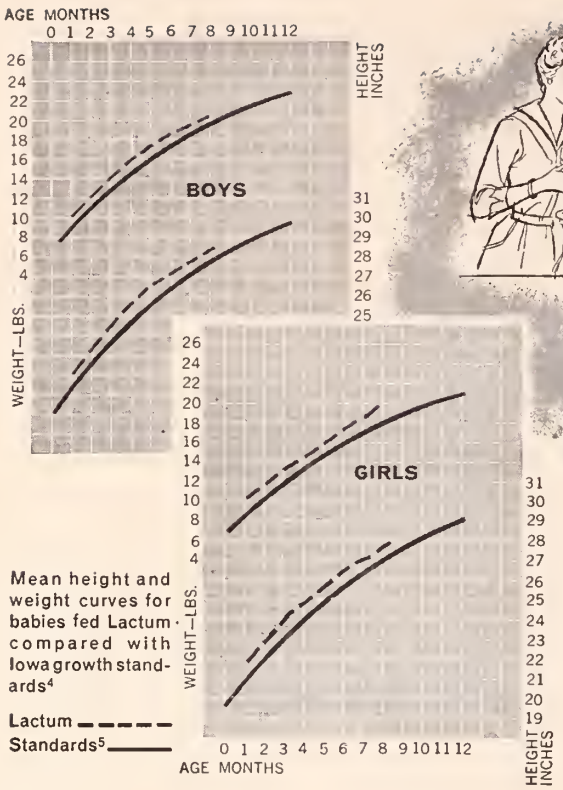
Space does not here permit of a complete listing by parishes but this information may be secured by any interested physician by writing the director of the Cancer Registry, Charity Hospital, New Orleans; or, the American Cancer Society, 822 Perdido Street, New Orleans.



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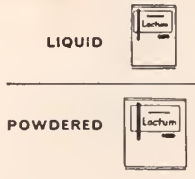
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(1) Jeans, P. C.: In A.M.A. Handbook of Nutrition, Ed. 2, Philadelphia, Blakiston, 1951, p. 275. (2) Albanese, A. A.: Pediat. 8: 455, 1951. (3) Holt, L. E., Jr., and McIntosh, R.: In Holt Pediatrics, Ed. 12, New York, Appleton-Century-Crofts, Inc., 1953, pp. 175-178. (4) Frost, I. H., and Jackson, R. L.: J. Pediat. 39: 585, 1951. (5) Jackson, R. L., and Kelly, H. G.: J. Pediat. 27: 215, 1945.

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POLIOMYELITIS

Polio has increased this year above what it was last year both nationally and for the State.

Through June 21st of this year, 58 cases of paralytic and 47 cases of non-paralytic Polio have been reported to the State Board of Health. Last year, for the same period, the Board had received reports of 42 paralytic and 41 non-paralytic cases. Almost half of the paralytic cases, and 1/3 of the non-paralytic cases, this year have been reported in Caddo and Ouachita Parishes.

Polio is most often seen in children, but for the past several years an increasing number of cases are being seen in the 20-40 year age group, especially among females.

Suggestive findings are malaise, anorexia, nausea, vomiting, headache, sore throat, constipation, abdominal pain, nuchal spinal rigidity with an elevated spinal fluid cell count and muscular soreness or weakess.

The principal differential diagnosis is from the infectious encephalitides, especially mumps and the arthropod-borne, virus diseases, lymphocytic choriomeningitis, coxsackie virus disease and bacterial meningitis.

Fatigue aggravates the severity of the disease so should be avoided.

The earlier the diagnosis and institution of treatment, usually the better the recovery. Paralytic cases are best handled in Polio centers.

The four centers in this State are in New Orleans, Baton Rouge, Alexandria and Shreveport.



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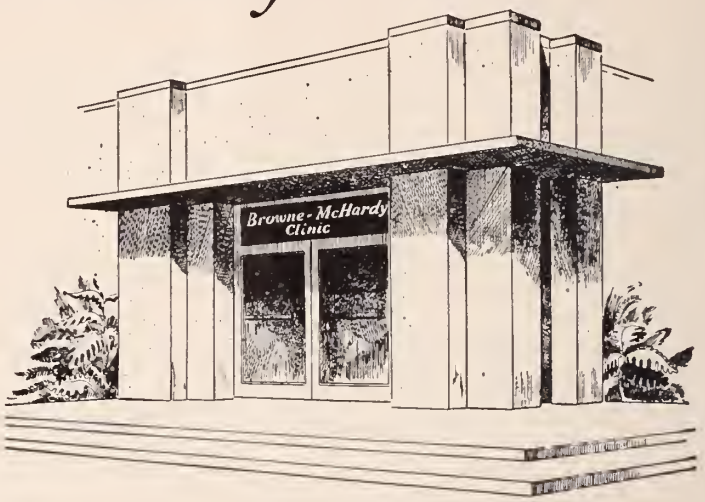


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1. Parsons, L., and Tenney, B., Jr.: M. Clin. North America *34*:1537, 1950.
2. Greenblatt, R. B.: J. Clin. Endocrinol. & Metab. *13*:828, 1953.

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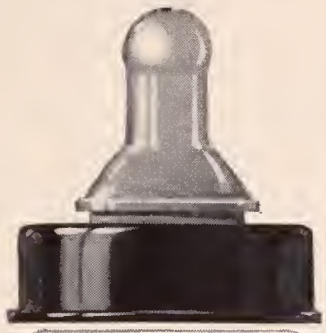
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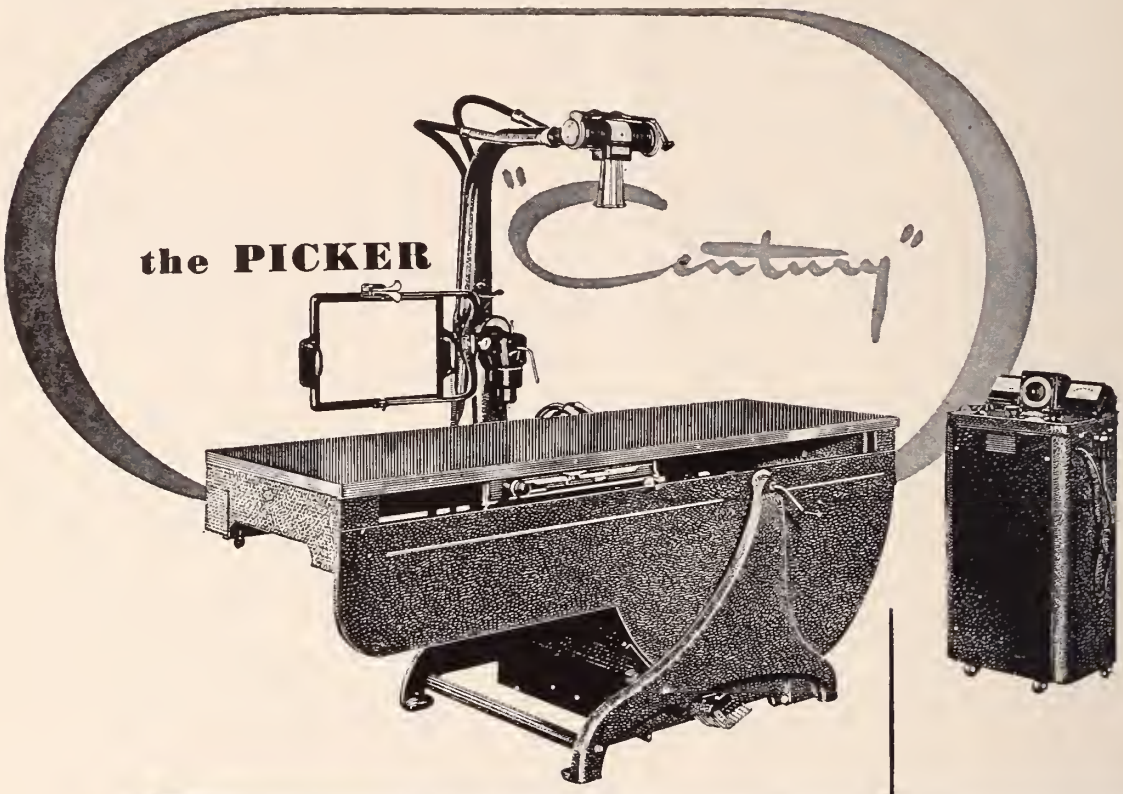
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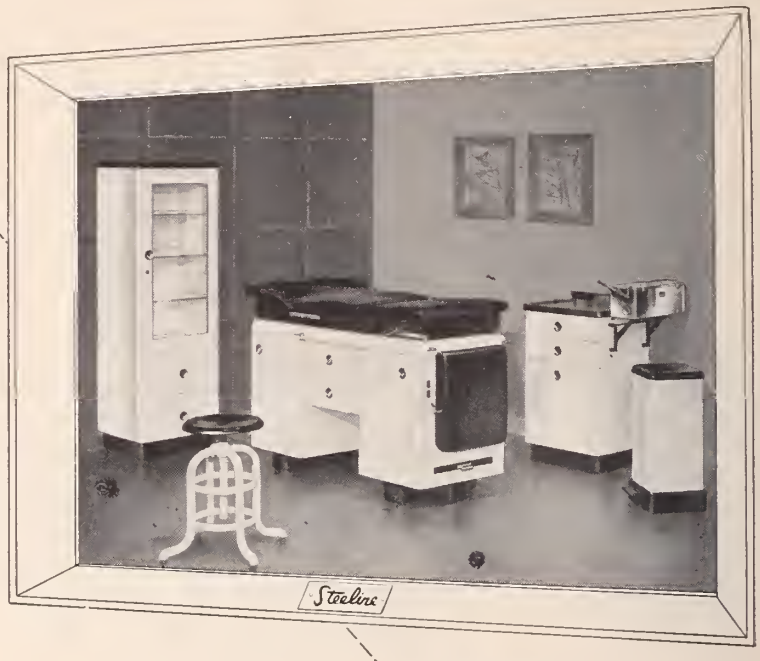
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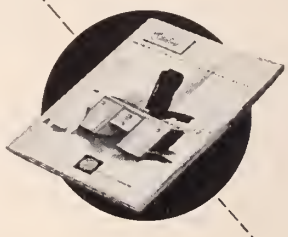
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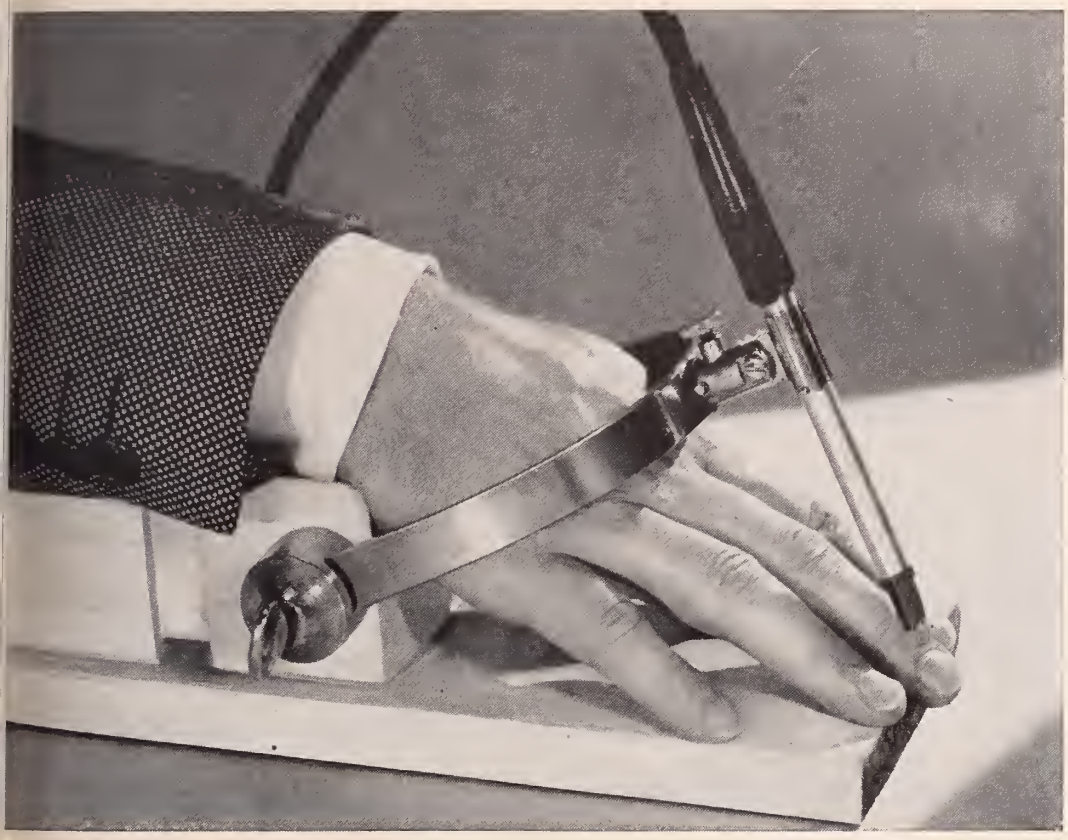
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ATYPICAL SYMPTOMS FROM RENAL NEOPLASMS *

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MINNEAPOLIS, MINN.

To avoid confusion, I will limit my remarks to malignant parenchymal neoplasms of the kidney in the adult. The nomenclature of these lesions has been briskly debated, and has involved confusion of the terms hypernephroma, nephroma, clear and granular celled carcinoma, adenocarcinoma, sarcoma, etc. One may minimize misunderstanding by adopting Wilson's view that the basic cell of the parenchymal neoplasm is that of the nephrogenic mesenchyme. Since it resembles embryonic connective tissue but develops into mature renal tubular epithelium, it gives rise to a variety of histological appearances. While "nephroma" best expresses this attitude, the term hypernephroma is so widely used and euphonious that it will undoubtedly continue to be the most popular name for these tumors. Most of them grow slowly and metastasize widely, both via the blood stream and through the lymphatics.

All physicians know the classic triad of pain, tumor, and hematuria, which ordinarily means advanced disease. Recognition while potentially curable depends upon suspicion generated by one of these symptoms, and verified by urography. If the affected kidney functions well, excretory urography suffices; if not, retrograde pyelography is needed. Inability to palpate a tumor is valueless, since a lesion of the upper pole of the kidney may become very large, particularly in a heavy set individual, without being detectable upon the most careful physical examination. Braasch summarizes the pyelographic findings as follows: (1) elongation of one or more calices; (2) encroachment on the renal pelvis; (3) dilatation or displacement of the renal pelvis; and (4) deformity and displacement of the ureteropelvic junction and upper ureter. (Figure 1) It



Figure 1. Pyelogram of renal neoplasm.

is quite evident that an encapsulated, globular neoplasm may produce exactly the same deformity as a simple cyst. It is here that accessory studies are important.

* Presented at the Seventeenth Annual Meeting of the New Orleans Graduate Medical Assembly, March 11, 1954.

† From the Urological Division of the Department of Surgery in the Medical School of the University of Minnesota, Minneapolis.

In such a situation an accelerated sedimentation rate will suggest, but not clinch the diagnosis of neoplasm. If the results of palpation and pyelography strongly favor a cyst, and the patient is a poor surgical risk, aspiration from behind is invaluable. If clear fluid is encountered, it can be withdrawn and replaced with a contrast agent; a sharply marginated, circular mass of uniform density rules out a new growth. (Figure 2)



Figure 2. Injected simple cyst.

If a deformity is seen but no mass can be felt, aortography is valuable if it is important to avoid operation. Cysts appear as round or oval defects in the blood supply of the kidney (Figure 3); parenchymal neoplasms exhibit puddling of the contrast agent in their sinuses (Figure 4). The aortogram, however, will not differentiate an intracystic papillary cystadenocarcinoma or a necrotic parenchymal tumor without a demonstrable blood supply from a simple cyst, nor will it reveal neoplasms of the renal pelvis. While intracystic neoplasms are uncommon, their existence constitutes a real threat to accurate diagnosis, and requires surgical exploration in the occasional doubtful case



Figure 3. Aortogram of simple cyst.

in which an error would be a serious matter. (Figure 4)



Figure 4. Aortogram of renal neoplasm (parenchymal).

In spite of these pitfalls, the diagnosis of the average renal neoplasm is a simple matter if one considers the possibility and

makes the necessary studies. The atypical one may be quite another matter. Three factors promote confusion: the characteristically slow growth of the tumor, which permits local adjustments in adjacent organs without any symptoms until metastasis or local invasion has occurred; the fact that degenerative changes may lead to toxic effects before attention is attracted by the local process in the kidney; and the possibility that symptoms from the renal lesion may mimic other disorders of the kidney itself. That these are real problems is indicated by my study of 92 cases; in 38, or 41 percent, the first symptom pointed to a lesion outside the urinary tract. These symptoms were amazingly diverse and deceiving. They may be divided into a number of fairly clear cut groups.

Perhaps the commonest of the misleading presenting complaints was fever, either coupled with toxemia or preceded by it. This occurs in about ten percent of renal neoplasms in the absence of infection, and appears to result from degenerative changes which release "pyrogenic substances" into the circulation. There is often an associated anemia, and the sedimentation rate is accelerated. Such a combination always requires urography to differentiate it from such disorders as Hodgkin's disease, obscure infections, and malignancy in other organs.

A rarer source of confusion results from invasion or compression of adjacent viscera by a renal neoplasm or by a hematoma resulting from it. Such lesions may be mistaken for carcinoma of the stomach if the duodenum or jejunum is involved; a large tumor may invade even the lower small intestine and cause acute or chronic obstruction; the same may happen to the colon.

More frequently, bizarre metastases may be misleading. While solitary deposits in bone are rare, they are well recognized. They may take the form of pulsating masses in the skull or long bones, or of silent tumors which lead to pathologic fractures, as in the spine. Radiologically, these appear as rarefactions, rather as if an area had been "erased." (Figure 5) Periosteal reactions are uncommon. Any atypical destructive tumor of bone calls for urographic studies. Vertebral involvement is rare, but has to be borne in mind in severe backaches.



Figure 5. Metastasis to humerus with pathologic fracture.

While metastases to the lungs are usually readily recognized in the roentgenogram as multiple rounded, sharply marginated areas of increased density, (Figure 6) an occasional solitary lesion may be irregular in outline, and so be mistaken for a bronchogenic carcinoma, especially if the patient has pain in the chest with cough and hemoptysis. Such a case in our clinic had been diagnosed "respiratory papilloma" after a bronchoscopic biopsy, at which point the occurrence of hematuria led to investigation of the kidneys and recognition of a hypernephroma; the pathologist then changed his diagnosis. Barney and Churchill reported such a patient well for five years after removal of the renal and pulmonary tumors.

An exceedingly uncommon site of metastasis is the frontal sinus; a patient so afflicted when seen at the University Hospital had symptoms of frontal sinusitis; their cause was recognized only when solid material was found in the sinus at



Figure 6. Metastases to lungs.

operation, and was identified as hypernephroma by microscopy.

Metastases to the digestive tract may be particularly difficult to recognize. In a remarkable instance seen at the University of Minnesota many years ago, a middle aged woman presented all of the features of cirrhosis of the liver. At laparotomy a "cirrhotic" liver was seen but not biopsied; improvement followed cholecystostomy, but autopsy a couple of years later revealed that the liver was filled with metastases from a neoplasm of the right kidney, and that cirrhosis was not present.

Secondary tumors of the tongue are usually solitary, deep seated nodules which are recognized only upon microscopic examination after removal. Metastatic lesions of the thyroid may be mistaken for adenomata or for primary carcinomata. They, too, are likely to be identified only with the microscope.

Metastases to the brain are rarely recognized as such when the primary tumor has been silent, until removed tissue is examined microscopically. The same may be said of metastases to the spinal cord, unless a vertebra is seen to be involved at roentgenography. In one case in our series the first inkling of disease consisted of paraplegia following a slight trauma which led to a pathological compression fracture.

Curiously enough, the ovaries and vaginal wall may receive metastatic deposits, apparently by retrograde flow through the ovarian vein, particularly on the left. The former consist of submucous nodules which are readily enucleated; the latter cause firm, elastic enlargements of the ovary. Recognition depends upon microscopic study. In addition, our series included one metastasis to the corpus spongiosum which was at first mistaken for a periurethral abscess; its true nature was determined at autopsy. Secondary deposits in the testicle have been reported.

The lymph nodes around the renal pedicle are, from the pathologist's viewpoint, the commonest sites of metastases from renal tumors. Not so well known is the possibility that the first recognizable sign of disease may be a mass in the neck from invasion of the cervical nodes; we have seen such a patient, as well as one in whom the local physician mistook a packet of involved inguinal glands for an inguinal hernia.

There are reports in the older literature of bronzing of the skin associated with anemia, at first thought to be of the primary or pernicious variety, but later found to be associated with a renal neoplasm which had not bled externally. The pigmentation of the skin has not been explained satisfactorily. Metastatic nodules in the skin have also been observed before the primary had manifested itself.

The possibility of confusing renal tumors and cysts has already been mentioned. It is well to remember that new growths of the kidney may produce occasional episodes of renal colic with minor hematuria, presumably from the passage of small clots or of bits of necrotic tumor. In one patient in our series, this had occurred annually for seven years.

Each episode had been treated by narcotics with relief until his physician died. The new one sent him for urological study, which revealed a large right hypernephroma. Curiously, he was still perfectly well seven years after nephrectomy.

The simultaneous presence of true renal stones together with a tumor is bound to give rise to considerable confusion, particularly if the pyelographic deformity is slight. One of our patients had passed several stones and had then remained in bed for a whole year; when the pyelogram showed only multiple filling defects thought to be overlying gas, he was naturally regarded as neurotic, and was sent home. He promptly passed another stone in the presence of his physician, and returned. At operation I was surprised and mortified to find a sizeable hypernephroma, but no stones—the filling defects had been due to overlying gas! In another instance, a calcified nodule of parenchymal neoplasm protruded into the renal pelvis; its true nature was discovered at operation for removal of the stone. It is only when so placed that the rather common calcifications within renal tumors are likely to be mistaken for stones in the pyelogram. The urological surgeon will very occasionally encounter a small hypernephroma as an incidental finding at a renal operation done for some other perfectly definite lesion.

In another curious case in our series, a man of thirty had several episodes of chills, fever and pyuria with mild renal pain. When his pyuria resisted good therapy, his physician sent him in for investigation. It was then discovered that a necrotic tumor was sloughing into the renal pelvis, and that infection was absent. There had been no gross bleeding. The patient survived nephrectomy for only a few months, after which he died from carcinomatosis.

The last possibility to be discussed is that of mistaking an adherent clot from renal bleeding for a vesical tumor. This will not happen if the inexperienced and occasional cystoscopist will subject all unusual lesions of the bladder to biopsy with cystoscopic forceps, if he cannot wash out the supposed tumor with an evacuating syringe.

To recapitulate, neoplasms of the renal parenchyma in the adult, while ordinarily easy to identify, occasionally give rise to bizarre symptoms due to compression, invasion, metastasis, or necrosis by or in a tumor which has not caused typical symptoms. In addition, they may mimic other lesions of the kidney. These cases will be recognized prior to death only if the physician bears these possibilities in mind, and makes, or causes to be made, careful pyelographic and, on occasion, other special examinations.

———o———

EVALUATION OF THE SURGICAL TREATMENT OF AORTIC STENOSIS

(79 CASES)*

WILLIAM LIKOFF, M. D.†
PHILADELPHIA, PA.

INTRODUCTION

Stenosis is the most common lesion of the aortic valve, and generally results from organization of the endocardial exudate accompanying rheumatic activity. Less frequently it may be due to a congenital malformation where the valve is usually bicuspid, or to a degenerative calcific sclerosis.

A surgical method to correct the commissural fusion of rheumatic aortic stenosis was conceived and employed by Bailey and his associates in 1950 [1].

This technique utilized an approach through the left ventricular chamber. The commissures are then split by means of a specially designed instrument.

Recently an important modification enables the surgeon to reach the valve directly through the root of the aorta. This permits the separation of the commissures

* Presented at the Seventy-fourth Annual Meeting of the Louisiana State Medical Society, May 22, 1954, in New Orleans.

† From the Department of Medicine, Hahnemann Medical College and Hospital, and the Bailey Thoracic Clinic, Philadelphia, Pa.

digitally or by means of a newly developed instrument.

This study analyzes the clinical experiences in a group of patients treated with either procedure. It is restricted to the 79 patients who had an aortic commissurotomy alone.

MATERIAL

The 79 patients consisted of 65 males and 14 females ranging in age from 14 to 67 years. They were divided into the groups as shown in Table 1.

TABLE 1
ANATOMIC PHYSIOLOGIC DIAGNOSIS AND MORTALITY RATES

GROUP	DIAGNOSIS	NO. OF CASES	DEATHS	% MORTALITY
I	AS	33	6	18.1
II	AS, ai	32	6	18.7
	AS, mi, ms	1	–	–
	AS, ai, mi, ms	3	–	–
III	AS, AI	7	5	71.4
	AS, AI, mi	1	–	–
	AS, MI	1	–	–
	AS, MI, ai	1	–	–
Totals		79	17	21.5

Legend: Capital letters refer to significant lesions.

Group I consisted of 33 patients in whom aortic stenosis was the *only* valvular lesion.

Group II included 36 patients in whom aortic stenosis was combined with other valvular lesions which were *physiologically insignificant*. In 32 of these patients aortic insufficiency was the only other involvement.

Group III consisted of 10 patients in whom aortic stenosis was associated with valvular lesions *other than mitral stenosis*, at least one of which was *physiologically significant*, and was not corrected at the time of surgery. In 7 of these patients aortic insufficiency was the only other involvement.

RESULTS

The preoperative clinical picture, including the symptomatic pattern, x-ray, and electrocardiographic examinations, brachial artery tracings, and the ballistocardiograms were analyzed to determine a basis for comparison with postoperative observations.

Aortic stenosis alone or in combination with valvular lesions other than significant mitral stenosis occurred predominantly in the male (Table 2). The vast majority of patients failed to recall the initial attack of rheumatic fever or any of its lesser manifestations (Table 2).

Fatigue was the earliest symptom and occurred in 98 per cent of the patients. Some degree of *dyspnea* was reported by every patient, although *pulmonary edema* had occurred in only 20 per cent of the group.

The *pain of coronary artery insufficiency* was the third most common symptom, and appeared in 58 per cent of the patients. *Edema* was noted in 39 per cent, *vertigo* in 36 per cent, and *syncope* in 27 per cent. *Hemoptysis* was reported by 20 per cent of the group.

Atrial fibrillation was not present unless the aortic stenosis was complicated by additional insignificant mitral lesions. *Emboli* were reported by 3 patients each of whom had atrial fibrillation.

From an auscultatory standpoint there was no exception to the finding of a loud, rough systolic murmur at the base of the heart. The aortic second sound was diminished in all but five patients. A thrill was present in 87 per cent of the patients.

The heart size was increased two plus or greater in 72 per cent and the aortic valve was calcified in 50 per cent of the group.

All but 4 patients had abnormal electrocardiograms. In 68 per cent of the patients the tracing was indicative of left

TABLE 2

	Group I		Group II		Group III		Totals	
Total No. Pts.	33		36		10		79	
Male	31	94%	26	70%	8	80%	65	82%
Female	2	6%	10	30%	2	20%	14	18%
History of Rheumatic Fever	9	27%	4	12%	5	50%	18	22%
Fatigue	32	97%	35	97%	10	100%	77	98%
Dyspnea—less 1 yr.	9	27%	2	6%	1	10%	12	15%
2-5 yrs.	21	54%	21	63%	7	70%	49	63%
more 5 yrs.	3	9%	13	28%	2	20%	18	22%
Pulmonary Edema	9	27%	6	18%	2	20%	17	20%
Angina	20	60%	19	53%	7	70%	46	58%
Syncope	12	42%	9	25%	1	10%	22	27%
Vertigo	16	48%	11	33%	2	20%	29	36%
Edema	10	30%	17	47%	4	40%	31	39%
Ascites	0	–	0	–	0	–	0	–
Hemoptysis	5	15%	9	25%	2	20%	16	20%
Emboli	0	–	3	9%	0	–	3	4%
Blood Pressure—Normal	24	73%	31	85%	9	90%	64	81%
High (above 150 systolic)	3	9%	3	9%	1	10%	7	9%
Low (below 100 systolic)	6	18%	2	5%	0	–	8	10%
Rhythm on admission								
Normal Sinus	33	100%	32	88%	9	90%	74	94%
Atrial fibrillation	0	–	4	12%	1	10%	5	6%
A_2								
Normal	2	6%	3	9%	0	–	5	6%
Decreased	31	94%	33	91%	10	100%	74	94%
Thrill	31	94%	33	91%	5	50%	69	87%
Heart Size—N	1	3%	3	9%	1	10%	5	6%
1 plus	8	25%	9	25%	1	10%	18	22%
2 plus	14	42%	18	54%	4	40%	36	44%
3 plus	5	15%	3	9%	4	40%	12	15%
4 plus	5	15%	3	9%	0	–	8	13%

TABLE 3
CAUSE OF DEATH

Cause of Death	Group I	Group II	Group III	Totals	Time Relation
Ventricular fibrillation	4	2	3	9	Immediate
Hemorrhage	1	3	1	5	Immediate
Embolism, cerebral	1	–	–	1	55 days
Renal failure	–	1	–	1	7 days
Free AI	–	–	1	1	1 day

ventricular hypertrophy and strain.

In all of the patients subjected to brachial artery tracings, an anacrotic notch or a slurring of the ascending limb of the curve with a delay in its peak was observed.[2]

The ballistocardiogram was abnormal in 46 (85 per cent) of the 54 patients examined. The most consistent abnormality was a shallow K wave which was observed in 40 patients under basal conditions.

OPERATIVE MORTALITY

The operative mortality in Group I was 18.1 per cent and in Group II, 18.7 per cent. In Group III, 50 per cent of the patients died. The mortality for all patients was 21.5 per cent (Table 1). The immediate causes of death are listed in

TABLE 4
POSTOPERATIVE COMPLICATIONS IN HOSPITAL

TYPE	GROUP I	GROUP II	GROUP III	TOTAL
1. Cardiac				
Atrial fibrillation (converted)	1	1	1	3
Atrial fibrillation (not converted)	2	1	–	3
Congestive failure	3	1	–	4
Pericarditis	–	2	–	2
2. Pulmonary				
Left effusion	12	7	1	20
Retained secretions	2	–	–	2
Hemopneumothorax	–	1	–	1
Atelectasis	1	–	–	1
3. Miscellaneous				
Anemia	3	2	–	5
Renal failure	1	2	–	3
Epistaxis	–	1	–	1
Fever (unexplained)	7	2	–	9

TABLE 5
GROUP CLASSIFICATION IN FOLLOW-UP REVIEW

	GROUP I	GROUP II	GROUP III	TOTALS
No. of Patients	19	21	4	44
Deaths since operation	1	1	–	2

TABLE 6
DURATION OF FOLLOW-UP REVIEW IN MONTHS

MONTHS SINCE SURGERY	GROUP I	GROUP II	GROUP III	TOTAL
3-6	3	2	–	5
6-12	7	14	4	25
12-18	6	3	–	9
18-24	2	1	–	3
Total	18	20	4	42

Table 3. The time relation of operation to death is listed in Table 3.

POSTOPERATIVE HOSPITAL COURSE

Cardiac complications without mortality occurred in 12 (19.3 per cent) of the patients (Table 4). *Atrial fibrillation* developed in 6 patients during the first postoperative week. The rhythm was reverted to a normal sinus mechanism in half of these patients, one of whom had additional but insignificant aortic regurgitation. Recovery was complete in all of these patients.

Pulmonary complications, without death, were encountered in 24 (38.7 per cent) of the patients surviving surgery.

Febrile reactions which persisted longer than the fifth postoperative day were considered a complication. These were encountered in 10 patients. The etiology in 1 patient was later established as staphylococcic subacute bacterial endocarditis from which the patient succumbed in three months. This was the only instance of subacute bacterial endocarditis in the entire series. The temperature elevation of the remaining 9 subsided by the twelfth postoperative day.

FOLLOW-UP REVIEW

The follow-up evaluation was limited to those patients who had been operated upon at least three months previously. Two deaths in this group occurred, one in three months due to subacute bacterial endocarditis, and the other in seven months as the result of congestive heart failure which had been present prior to operation and recurred following discharge

from the hospital. Of the remaining 60 patients, 44 had had surgery at least three months previously. Tables 5 and 6 indicate the group classifications and the time in months between surgery and the follow-up review.

Of 42 patients (Table 2) who had experienced fatigue as a major preoperative symptom, 36 (85.7 per cent) were significantly improved.

Thirty-seven patients had dyspnea, 33 (89.1 per cent) of whom were improved after surgery. Seven of these patients no longer experienced the complaint.

All of the patients with vertigo were improved and in 3 the symptoms disappeared entirely. Of the 13 patients who had syncope, not one had experienced a similar attack postoperatively. Thirteen patients had had peripheral edema, and of these, 9 no longer noticed this finding and 1 observed considerable improvement.

A rough aortic systolic murmur had been heard in all patients preoperatively. In 9 the rough murmur became blowing in character and reduced in intensity. In 19 of the remaining 33 patients (57.3 per cent), the murmur remained rough but less intense.

Thirty-seven patients had a decreased aortic second sound prior to surgery. Following operation, the aortic second sound was increased in intensity in 28 (75.6 per cent).

In 6 patients an early blowing diastolic murmur was heard after surgery where no murmur was present preoperatively. In 2 additional patients the intensity of the previously existing murmur was increased. A significant aortic regurgitation in 3 of these 8 patients was indicated by an appreciable increase in pulse pressure.

Although the transverse measurement of the heart in 4 patients decreased 1 cm. or more, significant changes in size were the exception.

Of the 38 patients with abnormal electrocardiogram, 6 (15.7 per cent) were returned to normal limits. All of these previously had patterns indicative of left ventricular hypertrophy and strain. In no case were the changes secondary to the withdrawal of digitalis.

An increase in the depth of the K wave in the ballistocardiogram was observed in 32 of the 40 patients (80 per cent) with shallow waves preoperatively.

In the late convalescent period from the time of hospital discharge and through the duration of this follow-up study, 4 patients had embolic accidents. Three involved the retinal artery and 1 the cerebral circulation. Eight patients (19 per cent) had episodic febrile reactions requiring further periods of bed rest, antibiotics or both.

DISCUSSION

Compared to the definite symptomatic pattern of aortic stenosis and its chronicity under adequate and previous medical management, the postoperative improvement in fatigability, dyspnea, and angina was impressive and particularly so since they were observed under a more rigorous routine of work than had been possible formerly. (Table 7)

The postoperative changes were not restricted to the subjective pattern. The change in the quality or intensity of the

TABLE 7
FOLLOW-UP REVIEW
SYMPTOMATIC COMPARISON

Symptom	Number of Patients Symptoms Preop.	Postop. Result	
Fatigue	42	MI	22
		I	14
		S	3
		W	3
Dyspnea	37	NP	7
		MI	20
		I	6
		S	3
		W	1
Angina	19	NP	6
		MI	9
		I	3
		S	1
Edema	13	NP	9
		MI	1
		S	3

Legend:
MI markedly improved
I improved
S same
W worse
NP not present

systolic murmur in approximately half of the patients following aortic commissurotomy can be accepted as a major accomplishment.

It is probable that altered valve function resulting from surgery is better reflected in heart sounds. Such a correlation has crystalized after mitral commissurotomy. If that contention is substantiated with time, the altered aortic second sound in three-fourths of the patients following aortic commissurotomy is an important objective gain.

The creation or exaggeration of the murmur of regurgitation is a serious development. The exchange of a significant stenosis for a significant regurgitation at the cost of a serious operation is an important and regrettable result, the infrequency of which is small solace.

Significant alterations in the brachial artery tracings have been noted by Goldberg and his associates.[2] These mainly consist of the disappearance of the anacrotic notch or a change in its abnormal position following the Valsalva maneuver.

The development of embolic accidents in the late recovery period probably resulted from the formation of left intraventricular or mural thrombus following the necessary instrumentation. Embolic issue resulting from fracture of a calcific valve was encountered as an immediate and not delayed hazard at surgery.

The mortality in aortic commissurotomy for pure stenosis is three times as great as that in mitral commissurotomy. The presence of additional valvular disease which is insignificant does not increase the risk of surgery. When aortic regurgitation is significant, the mortality is increased tenfold over that of mitral commissurotomy.

The presence of a significant regurgitation is the most important single factor contraindicating surgery for aortic stenosis. Until that time when regurgitation can be corrected simultaneously, surgery should not be performed in these patients.

On the basis of the experience in this series the indications for aortic commissurotomy may be clarified. The primary indication is the presence of aortic stenosis which results in significant pathophysiology. Any combination of the subjective or objective manifestations of the pathophysiology which is progressive is an acceptable indication provided none of the contraindications are present.

Significant aortic regurgitation and congestive heart failure are absolute contraindications. Additional insignificant valvular lesions are not deterrents. Heart failure that responds to therapy is not a contraindication if gallop rhythm is not present.

The slowly progressive nature of aortic stenosis, the operative mortality, and the postoperative complications are the obvious reasons for a sober approach to aortic commissurotomy. Where indicated, and when properly applied, this technique, however, has afforded relief and functional capacity to the vast majority of patients who could not obtain equal benefit under carefully regulated medical routines.

SUMMARY

1. An evaluation of the surgical management of aortic stenosis is described in which the mortality and complications are analyzed and the preoperative clinical and objective findings in 79 patients are compared with those three to twenty months after operation.

2. A striking improvement is observed in the key symptoms of fatigability, dyspnea, and angina when compared with the chronic state of disability which existed under persistent medical care.

3. Clinical changes are accompanied by alterations in the brachial artery tracing, and auscultatory findings which suggest improvement in valvular function.

4. The indications and contraindications for aortic commissurotomy are outlined.

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VARYING CLINICAL PATTERNS OF PULMONARY INFARCTION *

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The problem of thrombo-embolism, its dangerous and dreaded sequelae, has fast assumed a major role in the routine practice of medicine. With the advent of effective medical therapy for the infectious diseases and the relative increase in degenerative and neoplastic conditions, it has become essential for the physician to instigate earlier diagnosis, more effective therapy and a striking decrease in complicating features of these diseases. Pulmonary embolism and infarction represents one of the more serious and potentially fatal complications of medical and surgical practice. Therefore, a fuller knowledge of pulmonary infarction with its varied clinical patterns is necessary as the problem is not as simple as most of us have been led to believe. As we become more aware of the possibilities of this serious occurrence, we shall become more vigilant in the early diagnosis and effective treatment of thrombo-embolic disease to avoid a possibly fatal outcome.

The actual increase in incidence of thrombo-embolic disease is well established, but unfortunately, the clinical and roentgenologic recognition has lagged far behind. In 1940, Hampton and Castleman [1] made a critical study of 3,500 postmortem examinations. They found that in 9 per cent of cases pulmonary embolism existed and was the cause of death in 3.5 per cent. In 1941, Krause and Chester [2] reported on 6 548 autopsy studies and found hemorrhagic infarctions in 5.2 per cent. Ten years later Ochsner, DeBakey and DeCamp [3] reported on the actual increase in the incidence of thrombo-embolism and its more serious complication of pulmonary infarction. In the past decade the average life span has decidely increased; more people are reaching the stage of life where peripheral vascular and cardiac disease makes its appearance, with consequent slowing of the blood stream and acceleration of the clotting time. These factors and an increasing awareness of the problem contribute to this relative increase in incidence of thrombo-embolic disease. Stead [4] has made the statement that the diagnosis of pulmonary emboli and infarction will be made in direct proportion to the index of suspicion of the attending physician. To increase the index of suspicion to the possibilities of a potentially fatal disease, therefore, is one of the prime purposes in writing this paper.

ANALYSIS OF MATERIAL

To study the varying clinical patterns of pulmonary infarction, hundreds of cases have been studied. From this group 79 cases have been selected in which the diagnosis of pulmonary embolism and infarction has been established either by clinical or postmortem examination. The other cases have been discarded because they failed to meet minimal diagnostic criteria. Sixty-three of the cases were taken from the L.S.U. Unit of Charity Hospital in New Orleans, excluding the pediatric division and prematurity. The other 16 cases were diagnosed in the Southern Baptist Hospital, New Orleans. All cases were seen during the period from July 1st, 1952, through April 30th, 1954.

TABLE 1
ANALYSIS OF CASES

CLINICAL STATUS	NO. OF CASES
Heart disease	41
Postoperative	21
Post-traumatic	6
Miscellaneous	11
Total	79

Table 1 demonstrates the clinical status of the patients at the time a diagnosis of pulmonary embolism and infarction was made. A little over half the cases (52 per cent) represented patients who were suffering from heart disease. A little less than one-third of the patients (26.5 per cent) had recently undergone some operative procedure. Of the 6 post-traumatic patients, all had sustained some type of

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major fracture which required splinting and prolonged traction. The remaining cases formed a miscellaneous group with a variety of underlying diseases.

The relationship of pulmonary infarction to underlying or previous circulatory disturbance of the lung has been a subject of considerable controversy. Karsner [5, 6] has stated that there must be heart failure before infarction of the lung can occur. There has been considerable experimental work since both for and against this theory [7, 8]. Also, other workers have postulated that previous atelectasis and stasis may be more important predisposing factors in the development of pulmonary infarction. The dual blood supply of the lung has come in for considerable emphasis in recent experimental work. The role of the [9] bronchial arteries in pulmonary embolism and infarction has been studied very completely by Ellis, Grindlay and Edwards [10]. They conclude that the bronchial arterial circulation may actually be a contributing factor in the development of pulmonary infarction after pulmonary embolism. In a group of experiments they demonstrated that infarction occurred in lobes containing emboli when pulmonary venous congestion was present, regardless of the presence or absence of intact bronchial arterial circulation. In our series of cases it was apparent to us that underlying cardiac and circulatory disease played an important role in the development of clinical infarction. As noted earlier, 52 per cent of the patients were suffering from some form of heart disease.

TABLE 2
ETIOLOGIC TYPES OF HEART DISEASE

TYPE	NO. OF CASES	PERCENTAGE
Arteriosclerotic	18	44.0
Hypertensive	13	32.0
Luetic	5	12.0
Rheumatic	4	10.0
Congenital	1	2.0
Total	41	100.0

Table 2 gives an analysis of the etiologic types of heart disease encountered. Contrary to other reports [11] rheumatic heart disease accounted for only 10 per cent of the cases. Coronary artery disease and hypertension were the more responsible factors. Of considerable interest to us was the fact that out of the 41 patients with heart disease who developed infarction of the lung, 33 had objective clinical signs of heart failure with pulmonary congestion.

TABLE 3
ANATOMIC LOCATION OF PULMONARY INFARCTION

Right lower lobe	19
Left lower lobe	19
Multiple lobes	10
Right middle lobe	6
Right upper lobe	4
Left upper lobe	3

Table 3 classifies the anatomic location of the pulmonary infarctions in this group of cases. In this particular series there was equal distribution of the infarcted areas in the right and left lower lobes. As has been well demonstrated in past studies, infarcts of the lung are frequently multiple and are most often found in the right lung and in the lower lobe. The predilection for the right lung was not demonstrated in our series, and there tended to be equal distribution in the lower lobes. Ten of the cases showed multiple areas of infarction. Boyd [12] believes that the larger size of the right pulmonary artery and the greater congestion of the lower lobes are the factors which serve to explain the typical distribution of the pulmonary infarcts.

DIAGNOSIS

Table 4 illustrates the typical clinical pattern as seen in most cases of pulmonary infarction. However, it should be stressed that the diagnosis of this condition is not a simple, easy one. All too

TABLE 4
TYPICAL CLINICAL PATTERN IN PULMONARY INFARCTION

1. Shock or uneasiness
2. Dyspnea
3. Elevated pulse rate
4. Sudden chest pain
5. Hemoptysis
6. Pulmonary rales
7. Pleural friction rub
8. Slight to moderate fever
9. Leucocytosis
10. Elevated sedimentation rate

often the clinical picture is not of the so-called "text-book" variety. As Roth [13] has so aptly stated, "the diagnostic problems are many and are due mainly to the fact that acute pulmonary embolization often simulates other acute clinical syndromes." The collective appraisal of all clinical evidence is necessary if one would make a diagnosis of pulmonary infarction following embolization. The clinician must always be aware of the possibility of its occurrence or often the diagnosis will be overlooked. As pointed out earlier in this paper, pulmonary infarction tends to affect certain groups of patients: i.e., most particularly patients suffering from heart disease and in congestive failure; patients who have recently undergone surgical procedures; the chronically ill and invalid; and all patients who are subject to prolonged bed rest and inactivity.

TABLE 5
VARYING CLINICAL PATTERNS OF PULMONARY INFARCTION

	No. Cases	Per Cent
Dyspnea	71	90.0
Tachycardia	60	76.0
Chest pain	49	60.5
Fever	47	59.5
Cough	42	54.0
Shock	40	51.0
Leucocytosis	32	40.5
Hemoptysis	26	33.0
Thrombophlebitis	21	26.5
Friction rub	12	15.0
Phlebothrombosis	9	11.0

In Table 5 we have listed the more important and significant clinical symptoms and signs uncovered in critical analysis of the 79 cases studied. Dyspnea and tachycardia were present in the majority of cases, but the exact significance of these two clinical features is subject to doubt because of influence of underlying cardiac disease and congestive heart failure. However, even in the postoperative and posttraumatic groups an increase in the respiratory and pulse rates was a significant and early feature of pulmonary embolism.

Chest pain was present in a significant percentage of patients (60.5 per cent). Characteristically, it tended to be sharp and stabbing and showed definite relationship to the respiratory cycle. The pain was usually sudden in onset and in our series radiation was inconstant.

Fever and cough occurred in over half the patients. However, in our experience hemoptysis was present in only one-third of the patients and we do not regard it as a vital point in the diagnosis of pulmonary embolism with infarction. Chapman [14] has pointed out that when hemoptysis does occur within a day or two of the onset of chest pain that the material usually tends to be bright red, but as time passes it becomes dark brown in character.

From the study of these cases, shock was present in about half of the total number. It usually is the result of sudden massive obstruction of a major pulmonary artery and was universally present in the cases of sudden death. Often the initial shock resulted in a definite type of vasomotor syndrome with marked imbalance of the sympathetic nervous system, particularly manifesting itself in a general vagus reaction. Because of this type of vagal reaction, reports of acute abdominal pain simulating some type of acute abdominal crisis have been made [13]. In this particular series of cases, we did not encounter such a presenting syndrome, but it is easy to visualize the differential problems it would cause.

A significant degree of leucocytosis was present in less than half of our cases, and along with fever it is our impression that significant elevations are not usually seen unless complicating features are encountered.

A definite friction rub and leg signs were the least reliable clinical features in our study. This does not in any way minimize the extreme importance of searching for these signs, because when found they add significantly to the suspicion and diagnosis of pulmonary embolism with infarction. Since the incidence of thromboembolic disease is still relatively high in postoperative patients and usually occurs in areas that are easily accessible to direct examination, a careful search should be made at least daily.

RADIOLOGIC DIAGNOSIS

In the presence of the typical clinical features of pulmonary infarction, radiologic proof tends to assume a secondary and confirmatory role. Stress should be placed here on the very vital point that where the clinical pattern is indicative of pulmonary embolism, with or without infarction, treatment should never be deferred until radiologic proof has been established. Early recognition of the condition and prompt treatment may well be life-saving. Radiologic proof may often be delayed in its appearance; it may be obscured by secondary features such as massive pleural effusion, concomitant pneumonia, underlying heart disease and acute congestive failure; and thirdly, it may be hindered by the difficulty of obtaining good, diagnostic films early in the disease when the patient so often is seriously or critically ill, and cannot be moved. Short [11] after a study of 120 patients with embolism and infarction found that a triangular shadow with its apex toward the heart was not to be expected and was present in only 5 per cent of the cases they examined. Also, in 9 cases with definite thrombo-embolic disease of the lung normal radiographs were found. They consider the following factors as important in the negative radiograph: (1) Infarct shadow hidden behind diaphragm or heart, (2) pulmonary congestion, (3) hydrothorax, (4) embolism without infarction, (5) examination made too soon or too late, (6) inadequate technique. A very complete summary of the usual roentgenologic findings in both "complete" and "incomplete" pulmonary infarction has been outlined by Hampton and Castleman [1], and lately by Smith [15], who emphasizes their radiographic variability, and believes that the odd shape of a homogenous density is helpful in diagnosis and that multiple x-ray films are important. The fact that pulmonary embolism may occur without infarction has been stressed recently in the literature. Shapiro and Rigler [16] make the statement that "pulmonary embolism does not always result in the formation of a hemorrhagic infarct in an individual with a normal circulation." They stress in the radiologic examination the presence of a segmental area of increased radiability, a loss of the normal vascular pattern in the infarcted area, and often an increased density and sharper demarcation of the involved vessel. Figures 1, 2, 3, and 4 demonstrate the varying radiologic patterns of pulmonary infarction.



Fig. 1. Pulmonary infarction of the left lower lobe, showing the rather typical wedge-shaped density and tinting of the left diaphragm due to adhesion.

DIFFERENTIAL DIAGNOSIS

In Table 6 are listed some of the conditions most often confused with the diagnosis of pulmonary infarction. The impor-

TABLE 6
CLINICAL CONDITIONS MOST COMMONLY CONFUSED WITH PULMONARY INFARCTION

1.	Lobar pneumonia
2.	Acute myocardial infarction
3.	Congestive heart failure
4.	Massive or minimal collapse of lung
5.	Linear atelectasis
6.	Primary pleural effusion
7.	Mediastinal emphysema
8.	Lung abscess
9.	Acute abdominal episodes
10.	Subphrenic abscess

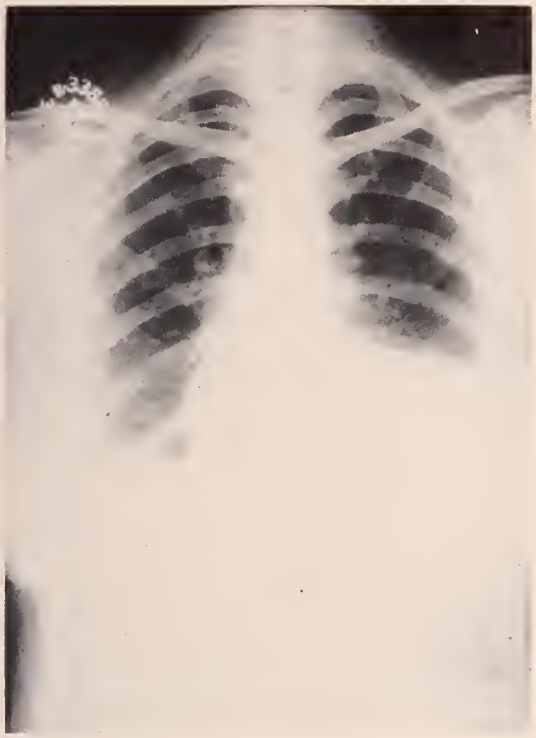


Fig. 2. A patient with infarction of the left lower lobe showing consolidation and pleural reaction.

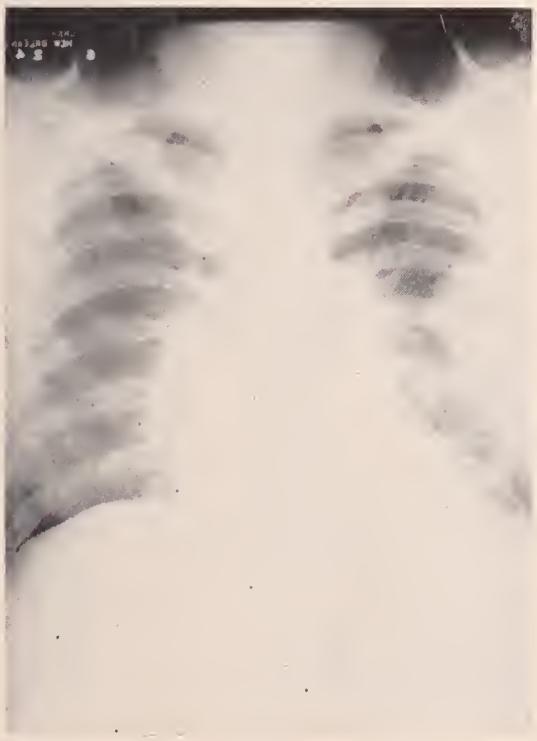


Fig. 3. Rounded density in periphery of left mid-lung field which proved to be pulmonary infarct. Initially lesion was considered to be possible carcinoma of lung.

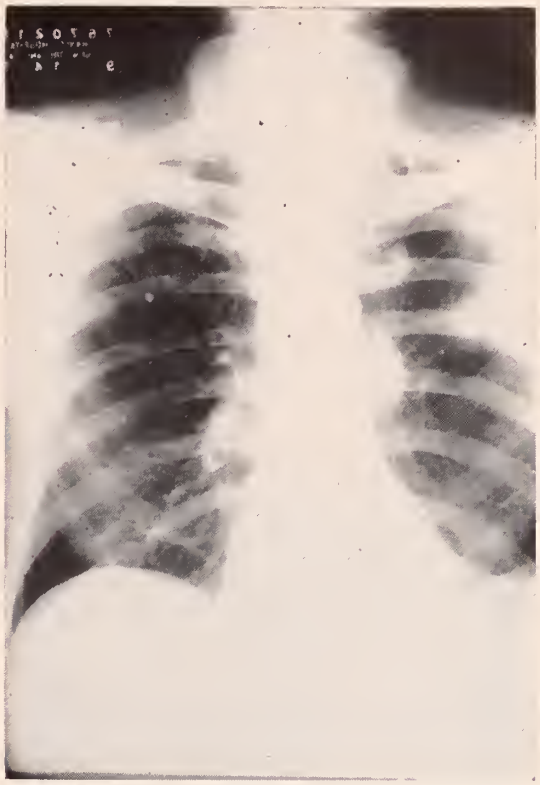


Fig. 4. Cavity formation within a bland pulmonary infarction involving the left upper lobe.

tance of a careful history where available and a critical analysis of the clinical and roentgenologic findings cannot be overemphasized.

One of the most important problems in the differential diagnosis of pulmonary infarction is that of acute myocardial infarction. Often the two conditions co-exist which makes the problem even more difficult. Pulmonary emboli arising from mural thrombi situated in the right side of the heart are very commonly encountered [17]. Probably the most important reason for confusing the two is the very close similarity of the electrocardiographic findings in pulmonary infarction with right heart failure (acute cor pulmonale) and posterior myocardial infarction. Roth [13] emphasized the difference in the onset of the two conditions; type of chest pain; later onset of shock (if present); fever, leucocytosis, and elevated sedimentation rate in myocardial infarction; and careful attention to radiologic and electrocardiographic details. In only 3 of our patients

did we find the typical electrocardiographic changes seen in acute pulmonary infarction. Murnaghan, McGinn and White [18] listed these changes as: (1) Prominent S wave and low origin of the T wave in lead I, the S-T segments starting slightly below the base line; (2) a gradual "staircase" ascent of the S-T interval, from the S wave to the T wave in lead II; (3) conspicuous Q waves and a late inversion of the T waves in lead III; and (4) in some cases, abnormal direction of the T waves in lead IV without alteration of the QRS complexes. In Fig. 5

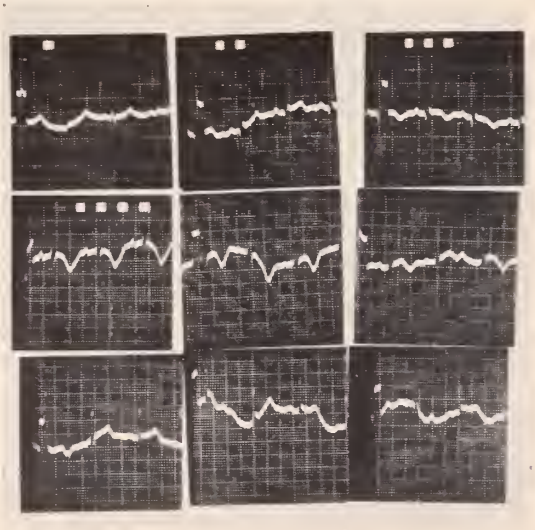


Fig. 5. The electrocardiogram in a patient with massive pulmonary infarction showing right axis deviation, S-T segment shift in lead II, Q wave and late inversion of the T wave in lead III.

is seen the electrocardiogram on one of our patients which was compatible with acute pulmonary infarction. These typical changes in the electrocardiogram are believed due to dilatation and partial failure of the chambers of the right side of the heart.

Durant [19] et al found other significant electrocardiographic changes in acute pulmonary embolization characterized by defective intraventricular conduction. They stated that graphic changes occur as follows: (1) early changes, characterized by intraventricular conduction defect of the atypical right bundle branch type, and (2) late changes, characterized by the pattern described by Murnaghan, McGinn and White [18] and others as representing acute cor pulmonale.

TREATMENT

The single, most important factor in the treatment of pulmonary infarction is early recognition of the condition. Since thrombo-embolic disease tends to affect certain groups more than others as previously pointed out, particular care should be given to the cardiac, postoperative, and chronically ill patient. Early recognition of a focus of thrombo-embolic disease and prompt institution of medical and/or surgical therapy can often prevent a possible fatal complication such as pulmonary infarction from occurring. Active treatment of this disease is both medical and surgical and demands close cooperation on the part of the internist, surgeon, and radiologist. The value and general acceptance of anticoagulant therapy in thrombo-embolic disease, and particularly, pulmonary infarction is now well recognized. There are numerous, well documented reports in the literature [20, 21]. In the present series of cases, only 19 patients received anticoagulants. Of this group there were 14 survivals and 5 deaths. Of the remaining cases that did not receive anticoagulants, there was a corresponding, higher mortality rate. It is not within the purpose or scope of this paper to give large statistical studies in support of anticoagulant therapy, or to go into a detailed account of individual anticoagulant drugs or the efficacy of each particular one. If anticoagulant therapy is used, remember that the drugs so used can and often do cause serious hemorrhagic complications if used indiscriminately or without full knowledge of their potential effects on the clotting mechanism. Adequate laboratory facilities are mandatory in the successful management of any program of anticoagulant therapy.

Venous ligation is also a very effective therapeutic measure to prevent further emboli from reaching the lungs from leg and pelvic veins. Stead [4] has pointed out the following points where venous ligation is used: (1) The source of the embolus is unknown and, therefore, both femoral

veins or the vena cava must be ligated. (2) An occasional immediate mortality is unavoidable if caval ligation is done; the ligation of both femoral veins under local anesthesia is a safer procedure in most severely ill patients. (3) In certain patients ligation is best followed by the use of anticoagulant therapy. (4) The amount of edema of the legs after ligation appears to depend on the extent of thrombophlebitis.

Finally, the supportive care of the patient is of extreme importance. Good nursing care, proper diet, and the prevention of further complications is essential. In our own experience we have found the role of antibiotics a very important one in the prevention of an overwhelming concomitant pneumonia, secondary lung abscess, empyema, and septicemia.

SUMMARY AND CONCLUSIONS

1. Following an analysis of 79 cases of pulmonary embolism and infarction, it was found that the typical pattern of clinical features is rarely encountered. Also, it is our opinion that the problem of pulmonary infarction has been oversimplified.

2. The more important and statistically significant clinical features were in our series of cases dyspnea, tachycardia, pleuritic chest pain of sudden onset, fever and cough. Shock was universally seen in cases where a major pulmonary artery was massively occluded, but in the total series of cases was found to be present in only half the cases (51 per cent).

3. Hemoptysis, pleural friction rub, and leg signs were found to be generally unreliable signs and were frequently absent. However, when these signs were present they served as strong confirmatory evidence of pulmonary infarction.

4. The radiologic diagnosis of pulmonary infarction was found to be an extremely difficult one to establish. The typical triangular shaped shadow is rarely encountered in contradistinction to older, more pragmatic descriptions of this condition.

5. The differential diagnosis of pulmonary infarction is a complex and difficult one due to the many clinical syndromes that may be simulated. The most important condition that must be differentiated from acute pulmonary infarction is that of posterior myocardial infarction.

6. An early recognition of the disease is essential. Prompt and adequate treatment will often prevent an otherwise fatal outcome. Stress is placed on a combined therapeutic program with full cooperation of the internist, surgeon, and radiologist. Patients should be treated on a highly selective basis with anticoagulants, venous ligation, and antibiotics.

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PRIMARY TREATMENT OF SOFT TISSUE INJURIES OF THE HAND *

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The main responsibility for the diagnosis and treatment of hand injuries rests upon the doctor who gives the primary care of this injury. The primary treatment is extremely important in that it determines, to a great extent, whether complications will result and to what degree of usefulness the hand can be restored. Thus, the doctor giving the primary treatment has the greatest responsibility and yet, in a large number of instances, rather minor significance is attached to the treatment of hand injuries. The purpose of this paper is to present some fundamentals in the primary treatment of hand injuries, in the hopes that better primary care can be given.

FIRST AID TREATMENT

As in any open, (compound), injury, the wound should be protected from further contamination or damage. Clean or sterile dressings should be used to cover the wound, bleeding should be controlled by pressure, whenever possible, and tourniquets should not be applied for emergency transportation, unless bleeding cannot be controlled by pressure dressings. If possible, the hand should be splinted in some manner for the emergency transportation of the patient.

When the patient is seen by the doctor, a history of the details of how the accident occurred should be obtained. The time, place, causative agent and mechanism of the injury, should all be determined since they are important in determining what the care will be. X-rays of the hand should be taken, preferably with the dressings in place, before the hand is examined. After the x-rays have been taken, the patient should be taken to an operating room or an emergency room with complete operating facilities available. The examination of the wound should be done under completely sterile conditions and the examiner should wear a mask to prevent further contamination of the wound.

WOUND EXAMINATION

After the history has been obtained and the x-rays reviewed and the patient has been taken to the operating room, the hand may be examined. The patient is not anesthetized. The wound is inspected. Sensation of all of the parts is tested and active motion of all of the parts is tested, against resistance, if possible. Tests are made to determine whether or not the function of the profundi and sublimi of the fingers is present, as well as function of the intrinsic muscles of the fingers and thumb and the wrist and finger extensors. The findings of this examination should be recorded at this time so that accurate records will be present, in case of later questions concerning the injury.

After this examination has been completed, the patient may then be anesthetized by the method chosen. This may be done by nerve block or by general anesthesia and in most cases we prefer general anesthesia. No surgery of the hand should be attempted without the bloodless field produced by proper application of a tourniquet and all cases, no matter how trivial, are cared for with the aid of a tourniquet. The tourniquet is applied before the cleaning of the hand is done, in order to prevent further bleeding.

The wound is covered with sterile dressings and the surrounding skin is shaved and cleansed with a soap or detergent and a suitable antiseptic. The antiseptic is not introduced into the wound and after completion of preparation of the skin the extremity is draped so that the hand is freely movable for the complete care. The surgeon then changes gown and

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gloves and proceeds with the surgical care of the wound.

If the wound has to be enlarged, in order to make the proper examination and treatment of the tissues, the principles laid down by Bunnell in his excellent text book should be adhered to. Incision should parallel flexion creases and if a flexion crease has to be crossed, a zigzag, or curving incision should be made so that scarring in the flexion crease with subsequent contraction will not occur.

In the hand, as in the face, all tissues should be spared as much as possible. Any tissue that is devitalized should be excised. A minimal amount of skin edge is excised and only traumatized noncontracting muscle is excised. Tendons and nerves should be preserved, if possible, unless it has been determined that the involved part or parts of fingers are to be amputated. Bone fragments should be preserved, unless they have been completely detached from surrounding tissue, in which case they should be removed.

After the removal of all devitalized tissue, the repair of the hand then can be undertaken. The first thing to be done is to repair the bony parts that have been damaged. If dislocations are present, they should be reduced. If they are stable, no further treatment of the dislocations is required, except for the immobilization to be used after the completion of the repair of the hand. If the dislocations are unstable and will not remain reduced, a small Kirschner wire may be drilled across the site which will prevent recurrence of the dislocation. This wire is usually cut off beneath the level of the skin and allowed to remain during the healing period. It may be removed at a later date, under local anesthesia. If fractures are present and are unstable, they also should be reduced under direct vision and in most cases small Kirschner wires, placed obliquely across the fracture line, will maintain a reduction until the postoperative splint has been applied. Not all fractures of the hand have to be pinned, but all unstable fractures should be pinned in order to preserve anatomical alignment. A small Kirschner wire hand drill, devised by Dr. Bunnell and his associates, is suitable for the introduction of the small Kirschner wires. In some instances, the electrical motors have attachments which can be used for the insertion of these wires.

TENDON INJURIES

In the fingers, laceration of the tendons is usually best treated primarily by the initial wound treatment and allowing the actual tendon laceration to go unrepaired until a later date. Occasionally, primary repair of the lacerated tendons in the finger is indicated but the indications for primary repair are very few and limited. If the injury should be at the insertion of a profundus tendon and the remainder of the tendon is not damaged in any way, this profundus could be reinserted into the distal phalanx. If the injury is proximal to the distal interphalangeal joint and distal to the distal flexion crease of the palm, no primary repair of the tendon should be done. This is the area described as "no man's land" by Dr. Bunnell and it is the area that leads to the greatest degree of adherence in any circumstances. No primary treatment of laceration in this area should be done at any time.

Lacerations of the profundus and sublimus tendons in the palm of the hand, from the level of the volar carpal ligament to the distal flexion crease of the palm, may be required primarily. In this instance, the sublimus tendons are not repaired but are allowed to retract out of the wound and only the profundus tendons are repaired. This will prevent adherence of the profundus and sublimus tendons together and will give a far better range of motion than it is possible to obtain when both flexor tendons are repaired. A finger with good profundus function has essentially a normal range of motion, in contrast to a finger having only sublimus function which has a definitely limited range of motion.

Lacerations of the flexor tendons proximal to the volar carpal ligament may be repaired individually and the profundus and sublimus tendons can be repaired with

less chance of adherence and resulting limitation of motion. Knowledge of the anatomy and interrelationships of the tendons is necessary in order to be able to attach the proper tendon ends together when multiple tendon lacerations are present.

Extensor tendon lacerations may be repaired at any level, in the fingers, hand, or forearm. If the laceration should be underneath the dorsal carpal ligament, then the dorsal carpal ligament should be excised and the tendon repaired. Usually, the tendons on the dorsal aspect of the wrist do not bowstring sufficiently to interfere with function and the removal of the ligament prevents the formation of adhesions to this structure, so that a good range of motion in the finger usually results. The repair of the extensor tendons is most difficult in the fingers, especially over the middle and distal joints of the fingers. The tendon here is quite flat and thin and requires extreme care to get good approximation. The finest of sutures should be used. This is preferably of the nonabsorbable type or of the pull out wire technique, as described by Bunnell.

NERVES

As a general rule, no attempt is made to repair the lacerated nerves on the dorsal aspect of the hand, since the sensory innervation on the dorsal aspect of the hand is not usually functionally important. Sensation on the flexor side of the fingers is, however, very important and whenever possible the nerves should be repaired. In the fingers the nerve ends should be approximated, if it is at all possible, and usually satisfactory repair of these nerves can be done with the expectation that a good return of sensation will result. The nerves are purely sensory at this level and usually a full return of function will be obtained. The same is true of lacerations of the nerves in the palm, except for the motor branches of the median and ulnar nerves. Lacerations of the motor branches of these two nerves, if properly identified, can be sutured and this has been successfully reported by both Bunnell and Boyes, independently. In this situation, where a pure motor nerve is sutured, a reasonably good return of function can be expected. When the repair is made at a later date, however, the duration of time existing between the laceration and the repair will greatly determine the degree of function returning. If the delay has been sufficiently long to allow complete degeneration of the nerve endings, then function probably will not return.

Lacerations of the nerves at the level of the volar carpal ligament, or proximal to this, means that the nerves are mixed and there is no way to identify the sensory and motor components of the nerve. Great care should be taken to try to prevent torsion of the nerve, in the hope that sensory fibers will be approximated to sensory fibers and motor fibers to motor fibers. In the larger nerve trunks, small vessels may be visible on the nerve and serve as useful landmarks in the approximation of the nerves.

It has been recommended by some persons that a delayed repair of the nerve be done, but we feel that in our experience the primary repair serves well in most instances, if the nerve has not been severely traumatized. If the nerve has been severely traumatized, it is best to do a very simple suture to prevent retraction of the nerve and to plan to do a secondary repair of the nerve at four to six weeks after good primary healing of the wound has occurred.

SKIN CLOSURE

In incised or in some lacerated wounds, simple closure of the wounds is possible. This closure is best done using the stainless steel wire technique, as devised by Bunnell. The wire is without reaction in the tissues and the sutures may be left in for the full three weeks, if necessary, without any reaction occurring around the suture material. Wire gives good approximation of the skin and makes it unnecessary to use subcutaneous material.

Tendons, joints, and nerves must not be left exposed; otherwise, necrosis will occur. If a tissue defect is present and a local flap can be swung over to cover a defect in a joint, tendon, or nerve, this

should be done. The donor area can then be split grafted to give adequate closure. The need of proper coverage is great but the limitations of local flaps make the indications for this rather limited. If local flaps should be used, care should be taken so that the blood supply of the flap is not devitalized, so that resulting slough will not lead to a larger wound defect. If tendons, nerves, and joints can be covered with skin and subcutaneous tissue, then the remaining defects can be split grafted. The donor area for this split graft may be the forearm, abdomen, or thigh, depending upon the amount of skin needed. Any of the techniques for removing split skin grafts is acceptable. Whenever split skin grafts are used, it is felt that a stent type of dressing should be used to provide immobility of the graft, so that healing can occur. If the dressing is loose and allowed to slide about on the hand, this may mechanically dislodge the skin graft so that a successful take will not be obtained. The stent dressing, usually using mechanics waste, provides adequate fixation of the graft.

In cases where local flaps cannot be used to cover tendons, nerves, and joints, and these structures and their underlying parts are worth saving, primary flaps may be used to cover the defect. In some cases, small flaps from an adjacent finger may be used to cover the defect with split grafting of the donor area. In many cases, however, the wounds are rather extensive and small flaps such as this do not suffice. In this case, abdominal flaps are the choice and the flap should be so placed that there is no tension on the flap itself or that there is a minimal amount of torsion on the base of the flap. If a large section of skin and subcutaneous tissue is needed, a broad base abdominal flap may be used and the base may be either proximal or distal, depending upon the location of the wound. The fundamentals laid down by many people must be observed, so that the proper proportions between the length and width of the flap are maintained. The flap should always be much wider than it is long, to insure adequate blood supply. In certain instances, the amount of skin needed is small enough to allow a single stage, tube pedicle to be used. In this situation, the technique, as described by Shaw and Payne is used. Immobilization of the arm to the body is necessary when abdominal flaps are used and plaster immobilization is usually necessary. Most abdominal flaps of this type can usually be cut down in three to four weeks. Proper care should be taken, however, to make sure that the blood supply of the flap is adequate. If there is any doubt at all, then delay of the pedicle should be done in stages, to insure the proper preservation of the flap. In general, it can be said that if the flap has been laid down so that it completely covers the defect and there is to be no reverse extension of the flap when it is cut loose, then three to four weeks is sufficient time to allow the complete flap to take in order to detach it.

POSTOPERATIVE DRESSING

The postoperative dressing is extremely important and is essential to protection of the involved damaged parts. Whenever possible, the position of function should be assumed. In this position, the wrist is dorsiflexed and the finger joints are all flexed to a moderate degree. The thumb is in a partially abducted position. This position of function may be used for the postoperative dressing in most tendon injuries in the fingers or palm or for nerve injuries. If the extensor tendons have been damaged, then the fingers will have to be extended to a greater degree, but should not be placed in complete extension under any circumstances. The fingers should be separated with gauze and if there has been extensive damage a pressure dressing of mechanics waste should be used. This affords even application of pressure without constriction. The dressing itself is made stable by the application of plaster splints, which are available in all installations during this modern day. This pressure dressing should be applied very carefully and should be comfortable and not cause any localized increased areas of pressure. This type of pressure dress-

ing is best applied with mechanics waste and gauze, rather than Ace bandages. The pressure can be more accurately controlled with multiple layers of gauze, whereas an Ace bandage sometimes tends to constrict, rather than apply proper pressure.

Continuous and uninterrupted elevation of the hand should be provided for thirty-six to forty-eight hours following the initial injury and its repair. Antibiotics are given and the choice of the antibiotic depends upon the condition of the injury and the probable nature of the contaminant organism. Tetanus antitoxin should be administered, or the toxoid, if prior inoculation has been given. If there is no clinical evidence of infection evident within forty-eight hours, the patient may be allowed to be ambulatory and elevation of the hand may be discontinued.

If nerves and tendons have been lacerated and repaired, three or four weeks of immobilization are necessary in order to allow adequate time for healing of these structures. After this period of time, active motion can be started and this is a graded exercise program and full strength should not be demanded until a period of at least six weeks has elapsed, in order to allow complete healing of the parts. If motor nerves have been severed, corrective splinting should follow the removal of the postoperative dressing. In the case of the ulnar nerve, this splinting should be directed towards preventing hyperextension of the metacarpophalangeal joint. In the case of the median nerve, this splinting should be directed toward holding the thumb in the partially or fully opposed position. The doctor should control the postoperative course of the patient and frequent visits and instruction as to the proper type and amount of exercise should be given. If skilled physical therapy help is available, the patient may be turned over to a physical therapist but the doctor should continue to observe the patient so that no damage will be done by over enthusiastic care.

If fractures are present and have been treated, immobilization will have to be continued, usually for a longer period of three weeks. Adjacent parts should be allowed motion as soon as possible, if they are not injured, so that the entire hand will not become stiffened through disuse. Most fractures, if internally fixed with Kirschner wires, can be allowed motion after four to five weeks, depending upon the location of the fracture and the stability of the fixation agents.

SUMMARY

First aid dressing should be applied to acute injuries as early as possible. This should be sterile dressing, if available.

X-ray examination should be made without disturbing the dressing on the hand, if possible.

Examination of the hand should be done under sterile conditions, preferably in the operating room. This should be done with the patient's full co-operation and determination of motor and sensory damage should be made at this time.

Surgical repair of the damaged hand should be done in the operating room with complete facilities available.

The principles for the repair of nerves and tendons and skin coverage have been presented. Tendons, nerves, and joints must not be left exposed and must be covered with skin and subcutaneous tissue. If primary closure is not obtainable with the normal coverage, then small local flaps may be used, or abdominal flaps become necessary. Split skin grafts may cover parts, other than those mentioned above.

Postoperative dressing should splint in the position of function whenever possible. Pressure dressings should be used to prevent unnecessary edema.

Postoperative immobilization should be continued for three weeks and then followed by a graded program of exercises to restore motion.

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MANAGEMENT OF THE CHILD WITH CONGENITAL HEART DISEASE *

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Rapid advances in surgery for congenital cardiovascular defects have taken the specific diagnostic aspects of this field from the category of a hobby to that of a specialized skill, frequently involving extensive study with an increasingly complex array of laboratory techniques. Despite the progress in methods of diagnosing and treating congenital heart disease, many cases can still be offered only symptomatic therapy: e.g., Eisenmenger's complex, transposition of the great vessels, etc. Other cases may fit into the group of lesions for which definitive surgical therapy is at present embryonic, as for example, the septal defects, while in a considerable number remedial surgery may be offered with some confidence (patent ductus arteriosus, pulmonic stenosis). The busy practitioner, faced suddenly and unexpectedly with a cardiac problem which he suspects is congenital, may wish to have several questions answered:

1. Is this congenital heart disease?
2. Is it amenable to surgical treatment?
3. When should specialized aid be sought?
4. What facilities are available in the state for carrying out specialized diagnostic and therapeutic procedures?
5. How should this child be managed?

1. IS THIS CONGENITAL HEART DISEASE?

This question is in many instances easily answered: e.g., a young child cyanotic since the first few days of life with a loud rough systolic murmur, right ventricular hypertrophy by electrocardiogram, and clear lung fields and a boot-shaped heart by x-ray. Such a child obviously has the tetralogy of Fallot, a congenital lesion. Equally striking is the acyanotic child of small build with frequent respiratory infections, loud systolic murmur since the first few months of life, large heart with increased, pulsating pulmonary vascular markings by fluoroscopy, and hypertrophy of the right or both ventricles by electrocardiogram. Such a child is again obviously the victim of a congenital defect, probably a septal defect, though possibly a patent ductus arteriosus. More difficult to evaluate is the patient with a soft or only moderately intense systolic murmur at the base of the heart, normal build, negative cardiac history, slightly prominent pulmonary artery, normal pulmonary vascular markings, and electrocardiogram slightly suggestive of right ventricular hypertrophy. Such a child may have a small atrial septal defect or may have only a relatively loud functional murmur. This question may not submit to a definite answer until definitive investigative procedures, such as cardiac catheterization, have been carried out, though in instances such as this the answer might be chiefly of academic interest.

2. IS IT AMENABLE TO SURGICAL TREATMENT?

It is now a matter of common knowledge that most patients with patent ductus arteriosus respond well to surgery. Other lesions for which surgery offers the possibility of complete or nearly complete relief are coarctation of the aorta, pulmonary stenosis, and constriction of the trachea and esophagus by vascular rings. The tetralogy of Fallot and most of the other cyanotic lesions in which there is significant pulmonary stenosis can be benefited by the performance of a shunt operation (Blalock-Taussig or Potts-Smith-Gibson). Less well standardized but progressing rapidly is the surgical treatment of atrial septal defect, while lesions such as ventricular septal defect, aortic septal defect, and anomalous entry of the pulmonary veins into the systemic veins or right atrium are theoretically amenable to surgical correction but actually are seldom if ever successfully attacked at present. Such numerically important lesions as Eisenmenger's complex and its

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analogues and complete transposition of the great vessels are still outside the realm of significant surgical aid.

3. WHEN SHOULD SPECIALIZED AID BE SOUGHT?

The answer to this question may be clouded by personal and financial problems when the distance at which such aid must be sought is significant. In such instances, when the child is doing well, the consultation may be arranged at the convenience of the parents and physician. However, certain situations demand rapid action, especially in regard to very small infants: enlarging heart, increasing cyanosis, syncopal episodes in a cyanotic child, onset of cardiac failure, or failure of a small infant to do well as reflected by poor appetite, poor weight gain, dyspnea, frequent respiratory infections, etc.

4. WHAT FACILITIES ARE AVAILABLE?

Physiologic investigations of congenital heart disease by the techniques of cardiac catheterization, arterial puncture, and angiocardiography have been carried on at Charity Hospital since 1948. Reports of some of these activities have been previously given before this group.[1, 2] These activities have been continued at an increasing rate and with continuing refinement of equipment and technique.

The technique of cardiac catheterization consists of intubating a peripheral vein with a specially constructed catheter and passing it distally along the venous channels to the heart. Ordinarily, the catheter will traverse the right atrium, right ventricle, and pulmonary artery and, in the presence of abnormal communications, may also take other routes: e.g., through an atrial septal defect into the left atrium, left ventricle, and pulmonary veins, or through a patent ductus arteriosus into the aorta. Blood samples are removed from various portions of the heart and great vessels and are compared by oxygen content with each other and with samples removed simultaneously from an indwelling needle in a peripheral artery. Direct pressure recordings are also made through the catheter and these may be compared with direct pressure measurements recorded simultaneously from the peripheral artery.

Information of diagnostic significance may thus be gained in several ways: (1) passage of the catheter through a defect; (2) comparison of oxygen contents of blood samples removed from different parts of the heart: e.g., increased oxygen content of blood removed from the right ventricle contrasted with blood removed from the right atrium suggests a ventricular septal defect with shunt of oxygenated blood from the high pressure left ventricle into the low pressure right ventricle; (3) abnormalities of pressure such as low pressure in the pulmonary artery and high pressure in the right ventricle, demonstrating pulmonary stenosis. Consideration of the oxygen saturation of blood removed from the peripheral artery, either alone or in conjunction with samples removed from the heart at cardiac catheterization, may render valuable information about cardiac and pulmonary function. Unsaturation of arterial blood of a degree insufficient to produce visible cyanosis can be readily detected by this technique.

Angiocardiography with present equipment is of less value in children, especially in infants, than in adults. Injection of radiopaque material into a peripheral vein may help to outline cardiovascular abnormalities as the dye moves through the heart. Retrograde aortography—the roentgenographic visualization of dye injected into the aorta via a carotid or brachial artery—may be successful in outlining coarctation of the aorta or demonstrating a patent ductus arteriosus by filling the pulmonary vascular tree through the abnormal vessel.

During the past year, 289 physiologic studies have been carried out on 170 different patients in the Heart Station at Charity Hospital. The subjects of these studies ranged in age from 4 days to more than 60 years. The most frequently demonstrated lesions have been patent ductus arteriosus, tetralogy of Fallot, and pulmonic stenosis with intact ventricular septum. Nearly one-half of all the patients

studied were found to have one of these lesions. The great majority of these were subjected to ameliorative surgical procedures. A wide variety of additional malformations has also been encountered, some of which were amenable to surgery.

5. MANAGEMENT OF THE CHILD

Although each child presents an individual problem, some general rules may be helpful in outlining a program for the afflicted patient. Probably the most important of these is that the physician and the family should rarely, if ever, attempt to set up the limits of activity allowed the child. The homeostatic mechanisms of the child are far more accurate than any that can be devised by physician, nurse, or family. For example, one child with Fallot's tetralogy may be able to do no more than walk a few steps while another may be as little handicapped as one of our patients, a prize-fighter who began to get a little short of breath after 6 rounds. A second important principle is that the child with congenital heart disease must be protected against bacteremia because of the possibility of development of subacute bacterial endocarditis. This principle involves early and vigorous therapy of infections, and prophylactic antibiotic treatment of situations in which a bacteremia may occur, such as when dental prophylaxis or therapy is administered. Third, supportive therapy must be exhibited when necessary. Digitalis may restore compensation in a heart which has failed from the severe strain of a large left-to-right shunt. Mercurial diuretics may enhance or replace the action of digitalis. The child with the tetralogy of Fallot will not exhibit failure but may develop episodes of severe cyanosis, dyspnea, and even syncope which are best treated with morphine in a dose of 1 mg. per 10 lbs. body weight. Oxygen in this situation cannot be expected to afford any marked relief since administration of even 100 per cent oxygen will result in only minor improvement of the saturation of the arterial blood. Nevertheless in such critical instances even the slight help which can be obtained in this manner should be welcomed.

The optimal time for definitive surgical therapy must be established for each child individually by weighing the technical difficulties and possible poor results of surgery in a small child against the urgency of the immediate situation. The exact time for each child can be established only by repeated observations of the child's progress and condition. Lastly, everyone connected with the care of the child—parents, physicians and teachers—must concentrate on preserving a normal cheerful outlook for the child and avoiding the establishment of a cardiac neurosis. This means treating the child, insofar as possible, in the same manner as his peers. Specifically the child must be allowed to limit his own activity, must not be overprotected, must be allowed to attend regular school if possible, and must be protected against repeated well intentioned admonitions to "Remember your heart".

SUMMARY

In summary, the range of severity of congenital heart lesions is enormous and this factor complicates the handling of a situation already protean in its manifestations. Either the cyanotic or acyanotic type of defect may be associated with very mild manifestations and requires only the usual good medical supervision needed by all children. Conversely either type of lesion may be associated with such severe symptomatology that death may result in the early months of life. The wise physician will, therefore, keep any child with known congenital heart disease under his close supervision and refer the child to a specialized center for further study upon the least suspicion that all is not going well.

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PROGRESS IN OBSTETRICS *

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In reviewing the literature of the last two years, it cannot be truthfully said that there has been any great change in any obstetrical treatment. However, light has been cast on many controversial subjects and new controversial subjects have arisen to replace them. The physiologists with work of such basic importance have taken a renewed interest in matters obstetrical with many interesting findings. Dieticians, who a few years ago did such fine work in aiding the obstetrician, continue their interest in obstetrical problems, and little doubt exists that their efforts have been largely responsible for the marked drop in incidence of preeclampsia and eclampsia. With anesthesiology coming into maturity as a specialty, numerous contributions related to obstetrics have been made, and the future appears most promising. My purpose in this paper is to bring together information from many sources in a necessarily brief and superficial manner so as to acquaint us with the progress which has been made in obstetrics in the last two years.

PSYCHOTHERAPY IN HABITUAL ABORTION

A most interesting advance in the treatment of habitual aborters has to do with psychotherapy. Repeatedly now, abortion is being recognized as a stress mechanism in itself and may represent a rejection of the repeated pregnancies as well as of motherhood. Almost invariably patients have been told their previous abortions were nature's way of expelling an abnormal pregnancy. While this is a soothing emolument at the time, it often plays right into the hands of a beautiful psychosomatic state regarding subsequent pregnancies. There are numerous statistics in recent literature which show a marked improvement in the handling of habitual abortion cases in which the importance of treating the patient psychotherapeutically has been emphasized. With few exceptions now the recent fad of treating habitual aborters with large doses of stilbesterol and progesterone has been abandoned. I have discontinued the use of these drugs in habitual abortion cases because they have been of no apparent value. Javert suggests a means of handling repeated abortion cases in which his methods consist of preconceptional consultations with the husband, detection, and correction of medical gynecologic and psychologic difficulties, a high citrus and vitamin C diet, a supplement of vitamin K daily, thyroid extract where indicated, psychotherapy and sedatives if desired. He has also interdicted coitus during the entire nine months and his reported figures of successful term deliveries are very impressive. I, too, am impressed with the roll of the psyche in an increasing number of incidences in our field. In many cases I recognize the value of administering psychotherapy but am often at a loss to know just how to approach it, as I am well aware that in doing so I am treading in a very dangerous and explosive field and may very well do more harm than good. We should attempt to increase our knowledge of the psychic response and be prepared at least to know how to avoid psychic trauma.

ABRUPTIO PLACENTA

Fortunately, most of us see very few cases of abruptio placenta, but when they do occur, tragic conclusions are altogether too frequent. In earlier years in dealing with abruptio placenta it was characteristic to consider it only a fetal hazard, but it is becoming increasingly clear that the hazard to the mother is also extremely great. It has been recognized that the degree of maternal shock far outweighs falling blood pressure and that, therefore, there is some other factor at work than fall of blood pressure in producing shock. There is some biologically active material which apparently comes from the site of abruption and is released into the blood stream. This is highly toxic, particularly to the vessels of the adrenal cortex, causing adrenal cortical necrosis and the syn-

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drome described so classically by Sheehan and Moore and today popularly known as Sheehan's disease. The fibrinogen level of the blood stream is extremely low in abruptio. The true cause of afibrinogenemia is unknown, but it is thought to be related to the biochemical activities of substances extractable from decidua and placenta. Page of California has done a great deal of valuable work on this subject, and he thinks that the hemorrhagic syndrome which often results with abruptio placenta is due to a sudden depletion of fibrinogen. This is probably due to the escape of placental or decidual thromboplastin into the maternal circulation which converts prothrombin to thrombin, which in turn converts fibrinogen to fibrin and the latter is deposited spottedly over a very large vascular surface, sometimes producing serious visceral lesions. Duncan Reed and his associates have been treating abruptio placenta very successfully with human fibrinogen fractions, and they emphasize the fact that intrauterine pressure favors the entrance of materials into the maternal venous system, and immediate rupture of the membranes is a logical therapeutic procedure. It has been shown that the longer one delays in rupturing the membranes and delivering the infant, the greater the degree of mortality. It is extremely important to stop the intravenous infusions of products from the placenta and decidua which are so highly toxic to the maternal system, and to do this one should first rupture the membranes and, secondly, effect delivery at the earliest opportunity.

RESUSCITATING THE NEWBORN

We may soon be administering oxygen into the gastrointestinal tract as a means of resuscitating the newborn. The method consists of inserting two catheters into the stomach and pumping oxygen into one of them allowing it to flow out the other. This distends the stomach and intestinal tract, and the baby becomes nice and pink long before respiration starts. This is an interesting bit of work and it remains to be seen whether or not it will prove of any general value.

BREECH DELIVERY

Management of breech deliveries has not materially changed in recent years. The overwhelming attitude most recently reported is one of conservatism. It is repeatedly stressed that a proper evaluation of the pelvis is most important in breech delivery. Breech presentations still occur about 4 per cent of the time, just as they did fifty years ago; but it is gratifying to note that fetal loss is much less than in years gone by. In good clinics today, about 3 per cent mortality is the average reported. It is well to stress the importance of avoiding any sense of panic or undue haste in delivering breeches. A conservative plan would be that the anus should be in full view before any attempt at delivery is made, and then with gentle assisting traction the infant could be delivered to the umbilicus. From the delivery of the umbilicus to the delivery of the mouth, there is about two or two and a half minutes before dangerous fetal anoxia develops. This seems like a very little time, but actually if you will time yourself in your deliveries you will notice that you can easily accomplish a delivery in much less time than this, and far greater harm is done by an excited and hurried type of delivery than by a more deliberate type of gentle traction and pressure. The Piper forcep continues to be an excellent instrument to have available in the event there is any difficulty with the after-coming head. An important thing about breech deliveries to remember is this, in attempting to deliver a breech too early in the progress of labor, you automatically place that infant in a higher mortality category. As in so many aspects of obstetrics, patience is an extreme virtue. Si Ward and his associates of New Orleans have written an excellent review of this subject.

The question of external version has been frequently discussed, and the more conservative attitude toward this procedure is the one generally prevailing. There are not many people who make a big issue of converting breeches into vertex presentations if there is any difficulty in so

doing. The best policy seems to be that around the thirty-second, thirty fourth, or thirty-fifth weeks of pregnancy, if an easy external version can be accomplished without undue pressure and without causing pain to the mother, it should be done; however, you should not fool yourself into thinking that you are doing a great deal, because you must keep in mind that about 20 per cent of the breech presentations that exist at that time of pregnancy would themselves convert to a vertex, and then, too, about 20 per cent of those individuals that you successfully convert by manual means will reconvert into a breech position before delivery time.

MORPHINE

It is interesting to note that after many years of morphine being so much on the forbidden list to find that it is coming back into some degree of popularity as a sedative in certain labor cases. It has been repeatedly observed, and with this I certainly agree, that there is no drug as valuable as morphine to soften a very rigid firm, thick cervix in the course of labor. I, however, do not use morphine if I think delivery is going to occur within three hours because it is certainly true that morphine is a severe respiratory depressant to the infant. We feel a little bit safer now in using morphine as an obstetric sedative in view of the fact there is an available antidote to the respiratory suppressing effect of morphine.

HEART DISEASE

Heart disease and pregnancy continue to be very poor bedfellows. Close cooperation between the obstetrician and the internist in the care of the pregnant cardiac yields the best results. It has been shown that the strain to the maternal circulation is less when the infant is delivered normally than when delivered by cesarean section, and while there is still considerable controversy in the literature relative to the proper anesthesia, most people favor the regional type anesthesia. It appears now that termination of a pregnancy because of heart disease is rarely, if ever, indicated.

CLINICAL AND X-RAY PELVIMETRY

Let's stop fooling ourselves that we can accurately evaluate the capacity of the pelvis by bimanual examination. It has been shown that clinical evaluation of the various internal measurements of the pelvis are grossly inaccurate and that today we cannot honestly say to ourselves that we are giving our patients good preventive obstetrical care unless we are insisting upon an x-ray pelvimetry on all prima gravida. There is no doubt in my mind that the most hazardous diameter of the maternal pelvis is the transverse of the midplane. It is in this diameter that the unknowing obstetrician is likely to find his greatest pitfall because the fetal head is often in view before the progress of the biparietal diameter of the baby's skull is impeded by the narrow midplane of the pelvis. With the baby crowning, the obstetrician is encouraged to believe that the delivery is almost accomplished, he applies forceps and pulls to find no progress. It is under this condition that excessive pressure is applied to the baby's head, damage is often done; and while the delivery is usually accomplished, it may well be that the infant will be stillborn or that irreparable brain damage will have occurred. This is a much more hazardous type of distocia than an inlet type distocia because in an inlet type distocia no one would apply forceps with great force if the baby's head is not engaged after many hours of labor. I do not hesitate to give a patient a trial of labor with a questionable inlet capacity, but a trial of labor with a midplane distocia is approached with a great deal more hesitancy. Do not hesitate to admit failed forceps and to proceed with cesarean delivery when real midplane distocia is encountered. While discussing this subject, I would like to verbalize thoughts that have been in my mind for many years relative to x-ray pelvimetry. While I value my friendship with several radiologists and admire their work greatly and lean heavily upon them for assistance, I cannot help but think that many of them overcharge for x-ray pelvimetry. This is an examination every

prima gravida should have before delivery. And since most couples having their first child are young and, in a business way just getting started, the financial burden of additional expense is great. And considering the volume of business that obstetricians will give radiologists for routine prima gravida x-ray pelvimetry, it would appear to me that a more reasonable fee than now in use should be charged for this examination. If we all make an appeal to our friends in this field, presenting the facts as we see them, we may well expect to find a reduction in fee and, therefore, a more general use of x-ray pelvimetry in all prima gravida.

DIABETES

There is still no clear answer to the management of a diabetic pregnancy. The one thing that rings crystal clear throughout the literature in recent years is the great importance of the early diagnosis and meticulous medical supervision of the diabetes. Most people have apparently abandoned the use of stilbesterol and other hormones in the routine care of the pregnant diabetic. This method, you will recall, was championed by Priscilla White who did an enormous amount of very fine work; but unfortunately, recent years have failed to reproduce her findings. The overall infant mortality continues to run about 20 per cent in pregnant diabetics. Many authors feel that cesarean section delivery should be very generously employed about the eight month of pregnancy, and in so doing the late pregnancy accidents to which diabetics are so prone may be avoided.

X-RAY STIMULATION OF OVARIES AND PITUITARY

One of the most soul-searching questions for obstetricians in our time has arisen over the use of x-ray stimulation of the ovaries and pituitary glands to induce ovulation. I am sure that you are familiar with the most interesting work that has been done in recent years in which it has been shown that with relatively small doses of x-ray over the ovaries and over the pituitary gland, many women who theretofore have not ovulated and have henceforth been unable to conceive can be made to ovulate and conceive. There are thousands of cases on record now of women who have had this type of stimulation, and the effectiveness of this treatment is no longer questioned. I have had several patients who have been married for a number of years, and on sterility work-ups have been found to be anovulatory. After all other means had failed, these women were subjected to stimulation doses over the ovaries and pituitary, and in two of the last three patients that I so treated, the patients became pregnant after the first menstrual period following the irradiation therapy. One of these has delivered a normal baby and the second will soon deliver. These are dramatic and heartening results, but the pleasure of this success is dimmed by warnings from geneticists who tell us that such x-ray stimulation to the gonads produce mutations which will eventually result in abnormalities in the offspring. They warn us that the abnormalities transmitted through the mutant genes may not become apparent for many generations. Fifty or even a hundred generations from now, these undesirable mutant genes will express themselves in some ill-effect to that generation. While there have been many cases followed through to the third generation without any recognizable defect in the children born, the warning of the geneticists still rings clear that harmful effects may occur many generations to come. I believe that we obstetricians will find it difficult to be so morally perfect as to withhold x-ray stimulation to a frustrated and anxious mother who is willing even to risk her own life to bear a child because we may fear some unfavorable mutant gene coming into evidence two or three thousand years from now. Most certainly the stimulus applied by this discussion should be in the direction of having us search for and find some means of stimulating ovulation other than by ionizing irradiation and its resultant mutations.

RH FACTOR

Very little real progress in the Rh problem has been made in the last two or three

years. The most severe form of iso-immunization is induced by transfusion, especially if the transfusion occurs after puberty. Another interesting observation of Levine in the early years of the Rh study to the effect that ABO incompatibility of the mother with her infant protects against Rh iso-immunization has been confirmed, and if sensitization does occur, the disease of the infant is relatively mild. However, ABO incompatibility between mother and child is a mixed blessing in that many of these incompatible pregnancies are lost in the early stages of pregnancy. Almost everyone is now in agreement that the best treatment for erythroblastosis is an early replacement transfusion. Kernicterus is the one severe sequela to erythroblastosis, but early and often repeated replacement transfusions reduces significantly the incident of kernicterus. One point for all of us to keep in mind in dealing with the Rh factor is that a mother may deliver a surviving infant after having lost a previous pregnancy to erythroblastosis. In the face of all the literature to which mothers are subject in their ladies' journals, I find myself frequently reassuring them regarding the Rh factor. I have no doubt that the importance of this has been grossly oversold to the public. In the absence of any previous transfusion iso-immunization, it is very unusual to have any erythroblastotic difficulties in the first two pregnancies, and then in the third pregnancy the chances are only one in twenty that there will be erythroblastosis in the newborn. I believe that many of us in the past have been too severe in advising against future pregnancies in many cases where Rh incompatibility between husband and wife exists. Repeated reassurances is about the only treatment I know in dealing with a pregnancy known to have an Rh incompatibility. A Coombs test should be taken from the blood of all infants born of Rh negative mothers who show iso-immunization, and in the positive cases, immediate replacement transfusion will offer a very high salvage rate for those infants.

CLASSES FOR PREGNANT MOTHERS

No review of obstetrics in recent years would be complete without recognition of the impact of classes for pregnant mothers and their husbands upon the care of the patient in labor. There are no individuals who have had real experience in this field who fail to recognize the value obtained by these methods. Criticism and expressions of impatience with the idea almost invariably come from individuals who are not fully familiar with the program and its effect. Despite the good which has been achieved in so many places with this technique, it seems apparent now that the system known as Natural Childbirth will eventually fade from our vocabulary. This is probably true because it is a very time-consuming program for the doctor, and those individuals getting satisfactory results with sedatives and regional anesthesia find it unnecessary to spend the additional time required by this technique.

SEDATIVES

Demerol, scopolamine, and the barbiturates are the most popular sedatives used during labor. There are some authorities who feel that demerol and the barbiturates should not be combined because they claim that the fetal respiratory suppression will be greater if these two drugs are combined. All of us are deeply appreciative of the amnesic effect of scopolamine. The once popular caudal anesthesia has now largely been abandoned, while the saddle block continues as a strong favorite with many.

CESAREAN SECTION

There has been a gentle increase in cesarean sections in the last few years. This, of course, resulted from liberalizing the indications for cesarean section. There has been a steady, marked increase in the low-cervical cesarean section with a constant decrease in the classical type, while at the same time there has been a rather marked increase in the use of regional anesthesia at the expense of general anesthesia.

As a highlight, for what it may be worth, it has been observed that the umbilical cord twists to the left in 82 per

cent of the cases, to the right in 14 per cent and not at all in 4 per cent. Sex prediction tests which enjoyed such a wide wave of interest within the last two years have now faded into the memories as repeated series have shown them to be very little more accurate than the flip of a coin.

PLACENTA PRAEVIA

The management of placenta praevia cases should be expectant. The initial hemorrhage in most placenta praevia cases is rarely of a serious quantity and does not necessarily call for immediate action being taken. Several weeks of gestation can often be gained, thereby increasing fetal survival rate by this expectant management. Most marginal placenta praevias can and should be delivered normally. These cases can usually be treated safely by simply rupturing the membranes and vaginal delivery.

In conclusion, it may be said that our greatest advance in obstetrics comes with the use of antibiotics and blood transfusions, for through their use more mothers and babies have been saved than by any other advance in the history of obstetrics. Patience is an extreme virtue in dealing with most obstetrical problems, as great harm often results from too early intervention in such problems as breech presentations, occipital posterior positions and placenta praevia. Excellent prenatal care and proper diet continue to prove their worth as reflected in a marked reduction in toxemia. Even though the effectiveness and general use of contraceptive devices have increased markedly, we may take some courage from the fact that the birth rate continues near an all time high and from this accept the challenge for a continuing progress in obstetrics.

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SUITS AGAINST PHYSICIANS FOR ALLEGED MALPRACTICE

The problem of suits against physicians for alleged malpractice has recently increased in Louisiana and constitutes an occupational hazard. It is even greater in many other states over the nation, particularly California. It is stated that more such legal actions have been placed against physicians in the last three years in Louisiana that in the previous fifteen. Lawyers who specialize in such suits have formed a pool of experience and legal data. A book has been written on how a lawyer should proceed in securing higher judgements against doctors.

The situation has many aspects. Three of these are of pressing importance to us at this time. One is the matter of insurance. Some insurance companies are withdrawing from this field; others take only preferred and selected risks. The rates are grouped according to the collective experience of the insuring companies and have increased two to four times over the country in recent years. The premium for average coverage when obtainable is said to be about $700 a year in California.

The increase in suits from whatever causes, brought increasing demand for higher coverage, which in turn made the field more tempting and constituted what is now a vicious circle. Such is the situation generally over the nation.

The position of a member of the Louisiana State Medical Society is fortunate in some respects, but still one which demands that he arrange for his own protection with due care. A blanket policy is not obtainable. Insurance coverage must be provided on an individual basis. The State Society undertakes to furnish legal counsel in those suits which the local society and Medical Defense Committee regard as defensible. Experience in this state and elsewhere has shown that the majority of these suits are not meritoriously founded. In the event that an adverse decision is received by the physician it is here that insurance coverage is a necessity.

The increase in suits has been accompanied by increase in the amount of the judicial awards. The causes of each are related. Prominent among them are the prolonged series of articles containing adverse comments about doctors which have been appearing in the press generally. A certain portion of the public has come to feel that medicine is an exact science and that the physician has the power to arrange the factors so that a perfect result is assured. Additional causes of fantastic awards have been the feeling that the physicians' resources are great and insurance coverage is munificent. In some instances, unfortunately, further causes have been the attitudes of the doctors them-

selves. However, most malpractice suits are filed against physicians who are above the median in experience and standing in their professional community. The devaluation of the dollar is regarded as only a minor element in the magnitude of the awards.

In securing insurance there are two approaches to the problem. One of these as indicated above involves evermounting coverage and premium. This type encourages excessive demand but is adequate when disaster falls. The award however is paid not out of a mysterious insurance fund but out of the pool premiums of the doctors who buy insurance protection. Ultimately, therefore, the expense contributes palpably to the cost of medical care.

The other approach is with smaller insurance coverage and emphasis on a specialized legal defense before, during and after the case reaches the court. For the public and the profession as a group this latter plan has merit. For the individual physician, the former gives security. The two are not entirely mutually exclusive. It is desirable for the profession to work out an adaptation of these plans by which the public interest will be served and also the pressing needs of the individual physician can be met.

Each local society should acquaint itself with the many phases of the problem and contrive to increase its collective protection through a legal defense committee. This committee should proceed to gather information and seek legal advice as soon as threatened action is apparent. In such a manner our legal counsel can be of assistance while all the facts are fresh in the minds of those concerned and the whole matter sufficiently fluid to be guided.

In an essay at the recent meeting of the American Medical Association, Dr. Louis J. Regan of Los Angeles, lists five situations in which the patient is likely to file a malpractice suit. These are:

1. When the patient is urged to sue by relatives or friends who are doctors, lawyers, or nurses.
2. When doctors sue to collect bills and the patient is unhappy with the treatment he received.
3. When the patients were "surprised and shocked" at the size of the fee asked.
4. When the patient resented being kept waiting in the office or otherwise felt he was imposed upon.
5. When "there has been criticism by some physician of the treating physician's care of the case or the results obtained".

This last Dr. L. A. Regan said, was more often the cause of suits than any of the others.

Since these are the situations leading to suits, how are they to be avoided? It is to be emphasized that no physician is immune. If the physician must be constantly apprehensive of suits, shortly and inevitably, his own aggressive instincts will suffer as will his professional and humanitarian motivations. Mistrust cannot long remain unilateral.

The physician starts in his relation to the patient in a favorable position and it is largely up to him to see that it is maintained, although the situation as a group is not as good as it was fifty or even twenty-five years ago. The public feels that the doctor should be an upright man, instructed in the art of healing, and further regards him as "a dedicated person, gentle, kind, always available, possessing endless charity and inexhaustible patience, and everlastingly resourceful."

Obviously when a suit occurs such an idealization has been destroyed and the goodwill of the patient has turned to resentment. To prevent such happenings requires the conscious attention and striving of the physician. The patient should be brought to recognize the doctor's sincere and intelligent interest in his welfare. The doctor should keep abreast with the adequate standards in his field of practice and stay within his field. He should cooperate in securing consultations. He should arrange written consent for operations in every instance and give no guar-

antees. Needless to say, he should be ever courteous and tactful. He must know and take advantage of every possible self-protecting measure.

Such admonitions it may be said are the counsel of perfection—by the same token however it is the measure of the physician's protection for himself.

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ORGANIZATION SECTION

The Executive Committee dedicates this section to the members of the Louisiana State Medical Society, feeling that a proper discussion of salient issues will contribute to the understanding and fortification of our Society.

An informed profession should be a wise one.

DR. HARRISON HONORED

Dr. Roy B. Harrison, one of our most distinguished and outstanding physicians for the past forty-two years was signally honored by the Louisiana State Medical Society at its 1954 Annual Session in New Orleans when he was presented a beautiful silver plaque extolling him for his many services to the State Society and the citizens of our State. Dr. Harrison has served the members of the medical profession and the people of Louisiana, with distinction and honor, and merits their commendation and thanks for the wonderful manner in which he has acquitted himself throughout the many years in which he has worked to elevate the medical profession and keep the medical services rendered our people on the highest possible plane.

Dr. Harrison graduated from Tulane University Medical School in 1912 and was licensed to practice the same year. He served as an intern at Charity Hospital in New Orleans 1910-1912; was Instructor in Surgery at Tulane 1912-25; Professor of Clinical Surgery at L.S.U., 1931-35; Senior Visiting Surgeon at Presbyterian Hospital 1912-15 and Associate Chief Surgeon 1918-24; Senior Member, Southern Baptist Hospital Staff since its formation in 1927, and President of the Staff 1934-35; Fellow of the American College of Surgeons since 1929 and certified by the American Board of Surgery in 1937.

Dr. Harrison was honored with the Presidency of the Louisiana State Medical Society and served in this capacity from 1932-1933. He was chairman of the Public Policy and Legislation Committees of the Orleans Parish and Louisiana State Medical Societies for many years and rendered unexcelled service to these societies and to our people in opposing all legislation detrimental to organized medicine.

In his capacity as Secretary-Treasurer of the Louisiana State Board of Medical Examiners, from 1921-1953, he was instrumental and played a very important part in keeping the practice of medicine in Louisiana in the hands of M.D.'s, where it belongs, and he was always found fighting to keep cultists and quackery out of our State. The lay citizens of this State, as well as all physicians, will be forever grateful to him for this great service to humanity.

Dr. Harrison was President of the Federation of State Medical Boards of the United States in 1935. He was a member of the National Board of Medical Examiners from 1942-1953 and a member of its Executive Board from 1946 to the present time. He also served as a member of the Advisory Council on Medical Education of the American Medical Association.

Dr. Harrison was the first President of the Surgical Association of Louisiana of which he was co-founder and organizer in 1947-1948.

Dr. Harrison has been and is still one of the great medical leaders in Louisiana and is loved and respected by his col-

leagues for all that he is—a good citizen, a great doctor and a true friend of organized medicine.

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STATE LEGISLATION

On the whole, we feel that our legislative program, in spite of some defeat, was most successful; in fact far more successful than many of our colleagues predicted. Admitting it to have been a hard legislative year, we were most fortunate in defeating three chiropractic bills and the Constitutional Amendment to the Code of Medical Practice which would have declared that the practice of chiropractic is not the practice of medicine. If this amendment had passed, the chiropractors and all other cultists would have been at liberty to practice the healing arts in Louisiana without any restrictions whatsoever. We are very thankful and grateful to those legislators who joined with the medical profession in defeating these bills and amendments, thereby protecting our people in seeing that they continue to get the highest possible grade of medical care, which they most assuredly deserve.

We should begin building our fences now for the fight which will surely face us in 1956. Now is the time to educate the public and to advise and consult with our legislators on all subjects vital to organized medicine and our people. We will be derelict in our duty as physicians if we fail to continue the fight for the good citizens of our State. Let us all unite as one in this fight. "In union there is strength".

It is now press time and too late to give you a complete resumé of legislation passed and defeated at the 1954 session of the legislature. Read the next issue of The Journal.

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REPORT ON ACTIONS OF THE HOUSE OF DELEGATES AMERICAN MEDICAL ASSOCIATION 103rd ANNUAL MEETING JUNE 21-25, 1954 SAN FRANCISCO

SAN FRANCISCO, June 25—Fee splitting, osteopathy, closed panel medical care plans, veterans' medical care and the training of foreign medical school graduates were among the major subjects of discussion and action during the sessions of the House of Delegates at the American Medical Association's 103rd Annual Meeting June 21-25 in San Francisco.

Named as president-elect for the coming year was Dr. Elmer Hess of Erie, Pa., who, until his election, was serving as a member of the House of Delegates and as Chairman of the Council on Medical Service. Dr. Hess will become president of the American Medical Association at the June, 1955, meeting in Atlantic City, succeeding Dr. Walter B. Martin of Norfolk, Va. Dr. Martin took office at the Tuesday evening inaugural session in San Francisco's Palace Hotel.

The House of Delegates voted the 1954 Distinguished Service Award of the American Medical Association to Dr. William Wayne Babcock of Philadelphia for his outstanding contributions to medicine and humanity. Dr. Babcock, who was professor of surgery and clinical surgery at Temple University School of Medicine from 1903 to 1944, received the award from Dr. Martin at the Tuesday evening inaugural ceremony.

The final registration total for the San Francisco meeting was expected to reach approximately 35,000, including more than 12,000 physicians.

Fee Splitting

The House adopted a supplementary report of the Reference Committee on Miscellaneous Business which recommended acceptance of a Judicial Council report on the subject of billing and made the additional recommendation "that the House of Delegates resolve that it firmly opposes fee splitting, rebating or payment of commissions in any guise whatsoever, and that it further opposes any mechanism that encourages this practice."

The Judicial Council report included the following statements:

"The Judicial Council is of the opinion that the only new facet concerning this subject that has come up recently is the

case of joint billing to some of the nonprofit insurance companies. In many cases these insurance companies insist on a joint or combined bill, but the bill is being paid in most instances by two checks. This is not considered unethical and all insurance plans which do not pay the individual physician in this manner should be urged to do so.

"The Judicial Council is still of the opinion that when two or more physicians actually and in person render service to one patient they should render separate bills.

"There are cases, however, where the patient may make a specific request to one of the physicians attending him that one bill be rendered for the entire services. Should this occur it is considered to be ethical if the physician from whom the bill is requested renders an itemized bill setting forth the services rendered by each physician and the fees charged. The amount of the fee charged should be paid directly to the individual physicians who rendered the services in question.

"Under no circumstances shall it be considered ethical for the physician to submit joint bills unless the patient specifically requests it and unless the services were actually rendered by the physicians as set out in the bill."

Osteopathy and Medicine

Four resolutions dealing with the osteopathic problem were considered. The House accepted a recommendation by the Reference Committee on Medical Education and Hospitals and adopted a Supplementary Report of the Board of Trustees on a Report of the Committee for the Study of Relations Between Osteopathy and Medicine:

"The justification or lack of justification of the 'cultist' appellation of modern osteopathic education could be settled with finality and to the satisfaction of most fair-minded individuals by direct on-campus observation and study of osteopathic schools. The Committee, therefore, proposed to the Conference Committee of the American Osteopathic Association that it obtain permission for the Committee for the Study of Relations between Osteopathy and Medicine to visit schools of osteopathy for this purpose.

"The Conference Committee favorably recommended this proposal to the board of trustees of the American Osteopathic Association which considered it at a special meeting on Feb. 6-7, 1954. It has referred the question to its house of delegates which will act upon the proposal in July, 1954. If the action of the house of delegates of the American Osteopathic Association be favorable, the on-campus observations can be carried out in the fall of this year.

"The Committee therefore recommends:

"1. That no action be taken on the report at this time and that final action be deferred until December, 1954.

"2. That the Committee be continued until December, 1954, in order to be available to evaluate education in schools of osteopathy should the house of delegates of the American Osteopathic Association act favorably upon the recommendation of its Conference Committee."

Closed Panel Plans

The much-publicized New York resolution, calling for several changes in the Principles of Medical Ethics relative to participation in closed panel medical care plans, was considered by the Reference Committee on Miscellaneous Business. That committee made the following recommendation, which was adopted by the House:

"In the discussion before your reference committee on this resolution, it became apparent to the committee that clarification and interpretation of the Principles of Medical Ethics in relation to prepaid medical care plans are desirable. As set forth in the bylaws, the Judicial Council has jurisdiction on all questions of medical ethics.

"Therefore, your reference committee recommends that the House of Delegates request the Judicial Council to . . . investigate the relations of physicians to prepaid medical care plans and render such

interpretations of the Principles of Medical Ethics as the Council deems necessary, and report to the House of Delegates not later than the next annual meeting of the Association.

"The committee further recommends that the New York resolution be referred to the Judicial Council for consideration in connection with this investigation."

The New York resolution, among other suggested changes, would add the following new paragraph to Chapter I, Sec. 4, "Advertising," of the Principles of Medical Ethics:

"It should be understood that any medical care plan, company, or organization which advertises for subscribers and directs such subscribers to a restricted panel of physicians for medical care is advertising for the benefit of the physicians involved."

Veterans' Medical Care

Accepting a report by the Reference Committee on Legislation and Public Relations, the House adopted two strong resolutions condemning the present practice of establishing service-connection for veterans' disabilities by legislative fiat. In recommending passage of both resolutions, the committee said:

"The study of the chronological expansion by law and regulation, together with evidence presented of pending legislation now before a Congressional Committee, emphasize all too clearly the imperative need of decisive action on the part of the American Medical Association.

"It is the opinion of the Committee that the time is at hand when the American Medical Association and its component societies should go all out in preventing this unscientific method of determination of service-connected disabilities, and that we respectfully request that copies of these resolutions be transmitted to the Congress of the United States and other appropriate federal agencies."

In connection with veterans' medical care, the House also adopted recommendations by the Reference Committee on Insurance and Medical Service which reaffirmed the policy on non-service-connected disabilities, established at the 1953 annual meeting, and which commended the informational program carried out since then by the Committee on Federal Medical Services of the Council on Medical Service.

Foreign Medical Graduates

Three resolutions and a Board of Trustees supplementary report were submitted to the House regarding the evaluation of foreign medical school graduates, a subject which attracted major interest earlier this year at the annual Congress on Medical Education and Licensure in Chicago. The Reference Committee on Medical Education and Hospitals spent much of its time listening to the ideas and proposals of various state medical societies, state licensing boards, members of the Council on Medical Education and Hospitals and others. The reference committee recommended that "the intent and aims of this Supplementary Report and the three resolutions can best be met by referring the entire problem to the Council on Medical Education and Hospitals for further study. It is recommended that the Council report at the Interim Session in 1954 regarding the progress relative to this study." The House adopted the reference committee's recommendations.

Seal of Acceptance

The Council on Medical Service presented a supplementary report outlining the difficulties encountered in conducting the Seal of Acceptance program, and recommending discontinuance of the Seal of Acceptance for voluntary health insurance plans. The report said that the standards and principles of the program will be maintained as guides and recommendations for all groups operating or establishing plans. The House, on recommendation of the Reference Committee on Insurance and Medical Service, adopted the Council report, thus terminating the Seal of Acceptance program for voluntary health insurance plans.

Registration of Hospitals

The House also approved a Board of

Trustees report calling for discontinuation of the registration of hospitals by the Council on Medical Education and Hospitals and suggesting that the Joint Commission on the Accreditation of Hospitals be requested to undertake the registration of hospitals in addition to its present accreditation activities.

Miscellaneous

Among a wide variety of other actions, the House also:

Voted to continue the holding of the annual Clinical Meetings;

Approved the establishment of a program of medical military scholarships with appropriate safeguards limiting the number of students involved;

Approved the extension, on a voluntary basis, of the Medical Education for National Defense program which currently is in operation in five medical schools as a pilot study, and

Authorized the Council on Scientific Assembly to conduct a thorough study of the use of tape recordings of the material presented at meetings of the Council, and asked for a report at the December meeting.

Opening Session

Highlights of the opening House session on Monday were selection of Dr. Babcock as recipient of the Distinguished Service Award and the addresses by Dr. Edward J. McCormick of Toledo, then president of the Association, and Dr. Martin, then president-elect.

Dr. McCormick called upon the medical profession to take the guess work out of medical costs by adopting average fee schedules on an area or regional basis. The Reference Committee on Reports of Officers later suggested that the Board of Trustees make a study of such programs where they already are in operation, and the House approved.

Dr. Martin, in his opening session address, declared that the most urgent problem before the medical profession is that of financing hospital services to make them more generally accessible. In his presidential inaugural address, Dr. Martin said that physicians are duty-bound to keep themselves informed on public matters affecting the medical welfare of the people, and he also urged doctors to "reach back farther than the disease" in treating their patients.

Special Citations

Two special citations were presented by the Association during the San Francisco meeting. During the presidential inauguration ceremony Dr. McCormick presented an award to a fellow Toledoan, Dr. Nicholas P. Dallis, for his outstanding health educational service as the writing member of the team that produces the illustrated feature, "Rex Morgan, M.D." At the closing House session on Thursday, Dr. Martin presented a special citation to Smith, Kline & French Laboratories of Philadelphia for "pioneering use of television in bettering the health of the nation." The plaque was accepted for the company by Mr. Francis Boyer, president.

The closing session also brought the announcement that the California Medical Association had presented a check for $100,000 to the American Medical Education Foundation.

Election of Officers

The election at the closing session brought the following results, in addition to the selection of Dr. Hess as president-elect:

Dr. Clark Bailey of Harlan, Ky., was named vice president.

Dr. David B. Allman of Atlantic City and Dr. F. J. L. Blasingame of Wharton, Texas, were reelected to their positions on the Board of Trustees.

Also reelected were Dr. George F. Lull of Chicago, secretary; Dr. J. J. Moore of Chicago, treasurer; Dr. James R. Reuling of Bayside, N.Y., speaker of the House of Delegates, and Dr. Vincent Askey of Los Angeles, vice speaker.

Dr. J. Morrison Hutcheson of Richmond, Va., was named by Dr. Martin as a member of the Judicial Council to succeed Dr. Edward R. Cunniffe of New York, who served as Council chairman for

many years. Dr. Homer Pearson of Miami, Fla., was elected new chairman.

Dr. W. Andrew Bunten of Cheyenne, Wyo., was elected a new member of the Council on Medical Education and Hospitals, succeeding Dr. W. L. Pressly of Due West, S. C. Dr. Charles T. Stone, Sr., of Galveston, Texas, was reelected to the same Council. Both terms run to 1959.

Dr. Floyd S. Winslow of Rochester, N.Y., was reelected to the Council on Constitution and By-Laws for a term ending in 1959.

Dr. Joseph D. McCarthy of Omaha, Neb., was reelected to the Council on Medical Service for another term running to 1959. To fill the vacancy created on the same Council by Dr. Hess' resignation following his election as president-elect, Dr. Robert L. Novy of Detroit, Mich., was selected.

The House of Delegates also chose New York City as the place for the 1957 annual meeting, San Francisco for 1958 and Atlantic City for 1959. Previously selected were Atlantic City for 1955 and Chicago for 1956. The dates of next year's meeting in Atlantic City are June 6-10.

George F. Lull, M. D.
Secretary-General Manager
American Medical Association

MEDICAL NEWS SECTION

CALENDAR

PARISH AND DISTRICT MEDICAL SOCIETY MEETINGS

Society	Date	Place
Calcasieu	Fourth Tuesday every other month	Lake Charles
East Baton Rouge	Second Tuesday of every month	Baton Rouge
Morehouse	Third Thursday of every month	Bastrop
Natchitoches	Second Tuesday of every month	
Orleans	Second Monday of every month	New Orleans
Ouachita	First Thursday of every month	Monroe
Rapides	First Monday of every month	Alexandria
Sabine	First Wednesday of every month	
Second District	Third Thursday of every month	
Shreveport	First Tuesday of every month	Shreveport
Vernon	First Thursday of every month	

AMA PHYSICIAN REGISTRATION

Louisiana was well represented at the recent meeting of the American Medical Association in San Francisco. The following New Orleans physicians registered:

Drs. G. E. Burch, Mannie Mallowitz, W. H. Mannheimer, Gordon McHardy, Emma S. Moss, Evelyn B. Nix, Alton Ochsner, Nelson K. Ordway, C. Thorpe Ray, Philip J. Saleeby, A. Segaloff, Arthur J. Silverman, Irving Singer, Benj. B. Weinstein, James H. Allen, W. P. Gardiner, Paul Getzoff, Philip Pizzolato, John Seabury, Lawrence H. Strug, M. T. Beaman, D. C. Browne, Guy A. Caldwell, C. Grenes Cole, Val H. Fuchs, W. R. Hardy, V. M. Henington, W. A. Knolle, R. J. Muelling, Jr., J. T. Sanders, Meyer D. Teitelbaum, Dorothy J. York, Chas. L. Cox, Nathan Goldstein, C. Gordon Johnson, P. H. Jones, H. L. Kearney, Charles B. Odom, Albert Pavy, Jr., Nathan Polmer, John R. Potter, J. W. Reddoch, Daniel C. Riordan, Bertha N. Wexler, J. W. Burks, Jr., Edgar Burns, Homer J. Dupuy, George S. Ellis, J. Morgan Lyons, Ester E. Anderson, Hulon Lott, Benj. L. Newell, and Neal Owens.

Other Louisiana physicians who registered are: J. H. McClendon, Amite; Gene D. Caldwell, Shreveport; Wm. W. Kyle, Baton Rouge; F. P. Bordelon, Jr., Marksville; Paul F. Cashio, Lacombe; Jerome C. Saltz, Baton Rouge; Harry M. Trifon, Shreveport; Francis J. Vincent, Crowley; Moss M. Bannerman, Baton Rouge; Jerome F. Tanna, Baton Rouge; Dwight S. Danburg, Greenwell Springs; Harry Q. Gahagan, Alexandria; Arthur A. Herold, Shreveport; Jean B. Mantin, Jr., Lake Charles; Albert L. McQuown, Baton Rouge; Wm. J. Norfleet, Shreveport; V. F. Chicola, Alexandria; John C. Hundley, Bastrop; Paul Jackson, Clinton; D. M. Kingsley, Alexandria; Burl B. Lane, Jr., Zachary; Chas. H. Mosely, Jr., Baton Rouge; and Jas. R. Phillips, Baton Rouge.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY, INC.

Applications for certification (American Board of Obstetrics and Gynecology) for the 1955 Part I Examinations are now being accepted. Candi-

dates are urged to make such application sometime in July or August.

All candidates for admission to the Examinations are required to submit with their application, a plain typewritten list of all patients admitted to the hospitals where they practice, for the year preceding their application or the year prior to their request for reopening of their application, with the diagnosis, pathological diagnosis, nature of treatment, and end result.

Application for examination or re-examination, as well as requests for resubmission of case abstracts, must be made to the Secretary prior to October 1, 1954.

Under a change of requirements for the Part I Examination, candidates must submit 20 case abstracts rather than 25 as formerly. Five of these may be from one's residency service.

For further information contact: Robert L. Faulkner, M. D., 2105 Adelbert Road, Cleveland 6, Ohio.

COURSE IN CARDIOVASCULAR DISEASES

A course in "Newer Developments in Cardiovascular Diseases" will be given at The Mount Sinai Hospital, New York, October 11th through 15th, 1954, under the auspices of the American College of Physicians. As the title implies, the recent advances will be stressed. Dr. Arthur M. Master and Dr. Charles K. Friedberg will direct the course and prominent cardiologists and cardiac surgeons will participate.

UROLOGY AWARD

The American Urological Association offers an annual award of $1,000 (first prize of $500, second prize $300 and third prize $200) for essays on the result of some clinical or laboratory research in urology. Competition shall be limited to urologists who have been graduated not more than ten years, and to men in training to become urologists.

The first prize essay will appear on the program of the forthcoming meeting of the American Urological Association, to be held at the Biltmore Hotel, Los Angeles, California, May 16-19, 1955.

For full particulars write the Executive Secretary, William P. Didusch, 1120 North Charles Street, Baltimore, Maryland. Essays must be in his hands before January 1, 1955.

BOOK REVIEWS

Practical Clinical Chemistry. A Guide for Technicians; by Alma Hiller, Springfield, Ill., Charles C. Thomas, 1953, pp. 266, Price $6.50.

This book has been written for technicians in clinical chemistry departments of hospital laboratories and its purpose has been well achieved. It will not be so useful for another group.

Seldom are the notebooks and procedure outline cards which all laboratories use, anywhere nearly so well-written. A compendium of the methods employed by another laboratory is always useful and the usefulness is multiplied when the methods have been successfully used by, and under the critical eye of, so able a biochemist as Dr. Hiller.

Some of the methods are not the ones most generally used. For amylase, Somogy's method is more generally used than is the one described, Smith and Roe. For chlorides, Whitehorn's and Schales' methods are more used than is Hiller and Van Slyke. Elon is not the most generally used reducing agent for phospho-molybdic acid. And few use the uric acid method of Kern and Stransky. Perhaps if everyone had given these methods as much study as Dr. Hiller has, they would be the ones used.

M. S. Ewing, M. S., M. T.

Thoughts about Life; by Felix Friedberg, New York, Philosophical Library, 1954, Pp. 40, Price $2.50.

Written by a teacher of biochemistry in Howard University, these short essays are interesting and thought-provoking. Subjects included are: Ideation and Reality; Function of a University; Philosophy's Service to the Scientist; A Work of Art; and Characteristic Phenomena of Living Things. The personal philosophy of the author as a teacher is expressed in his statement: "To open the mind and heart of youths, to induce tolerance, fairness and understanding, that is the primary goal of education."

Mary Louise Marshall

Living in Balance; by Frank S. Caprio, Washington, D. C., Arundel Press, Inc. 1952, Pp. 246, Price $3.75.

A lay exposition of the "whys" and "wherefores" of our conduct, interestingly presented. It should be of value in its field.

The author presents his "therefores" for living in balance.

I. L. Robbins, M. D.

PUBLICATIONS RECEIVED

Health Education Council, N. Y.: Beyond the Germ Theory, by Iago Galdston, M. D.

J. B. Lippincott Co., Phila.: New and Nonofficial Remedies (1954), issued by The Council on Pharmacy and Chemistry, American Medical Association.

W. B. Saunders Co., Phila.: Fundamentals of Anesthesia, a publication of the Council on Pharmacy and Chemistry of the American Medical Association (3rd edit.); Practical Fluid Therapy in Pediatrics, by Fontaine S. Hill, M. D.

Charles C Thomas, Publisher, Springfield, Ill.: The Diagnosis and Treatment of the Infertile Female, by Fred A. Simmons, M. D.; The Treatment of the Alcoholic, by Fritz Kant, M. D.

Amebiasis[1] a "Poorly Reported" Disease

Until serious complications arise, amebiasis may pass unrecognized and patients receive only symptomatic treatment.

Although amebiasis is a disease with serious morbidity and mortality, statistics on its incidence[1] are incomplete because its manifestations are not commonly recognized and consequently not reported.

"*Vague symptoms[2] referable to the gastrointestinal tract, such as indigestion or indefinite abdominal pains, with or without abnormally formed stools, may result from intestinal amebiasis. Not infrequently in cases in which such symptoms are ascribed to psychoneurosis after extensive x-ray studies have been carried out, complete relief is obtained with antiamebic therapy.*"

To prevent possible development of an incapacitating or even fatal illness and to eliminate a reservoir of infection in the community, diagnosing and treating[3] even seemingly healthy "carriers" and those having mild symptoms of amebiasis is advised.

Early diagnosis[1] is important because infection can be rapidly and completely cleared, with the proper choice of drugs and due consideration for the principles of therapy. For treatment of the bowel phase these authors find Diodoquin "most satisfactory."

For chronic amebic infections, Goodwin[4] finds Diodoquin to be one of the best drugs at present available.

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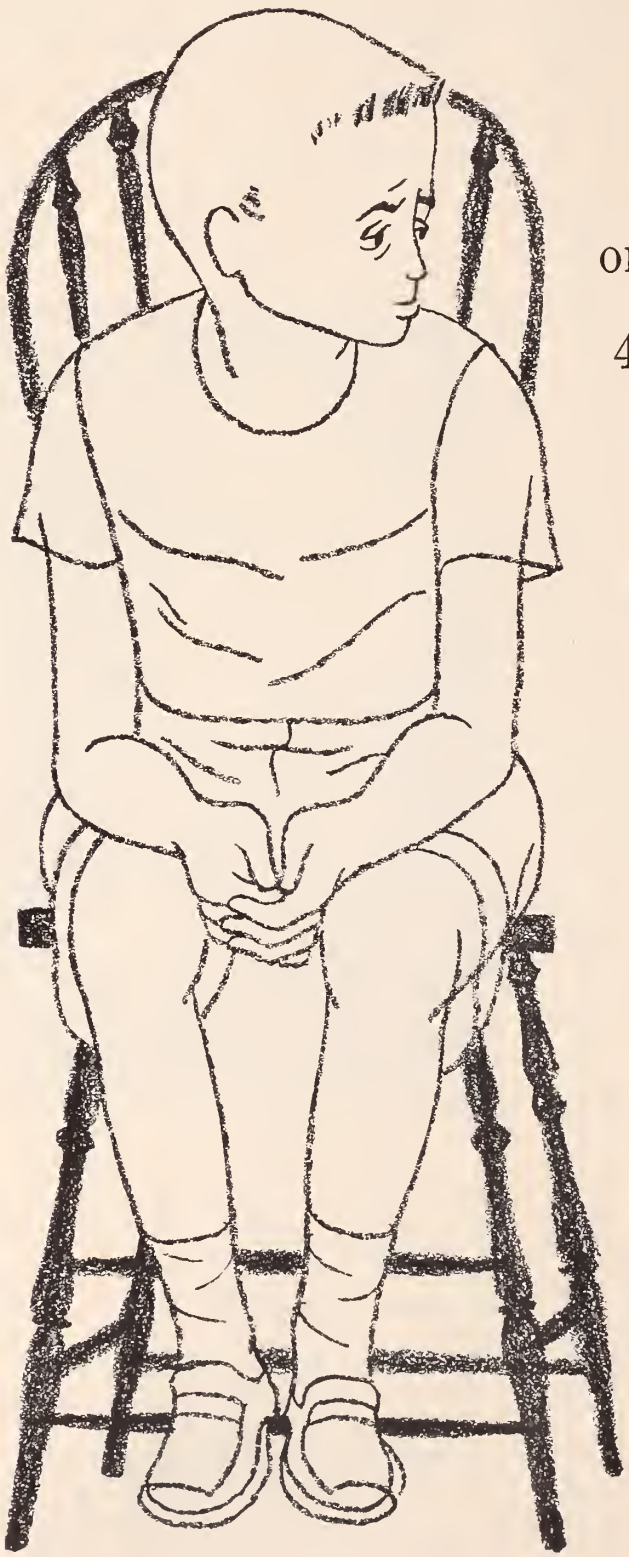
Endamoeba histolytica (*trophozoite*).

1. Hamilton, H. E., and Zavala, D. C.: Amebiasis in Iowa: Diagnosis and Treatment, J. Iowa M. Soc. *42*:1 (Jan.) 1952.

2. Goldman, M. J.: Less Commonly Recognized Clinical Features of Amebiasis, California Med. *76*:266 (April) 1952.

3. Weingarten, M., and Herzig, W. F.: The Clinical Manifestations of Chronic Amebiasis, Rev. Gastroenterol. *20*:667 (Sept.) 1953.

4. Goodwin, L. G.: Review Article: The Chemotherapy of Tropical Disease: Part 1. Protozoal Infections, J. Pharm. & Pharmacol. *4*:153 (March) 1952.



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Schaerrer, W. C., J. Missouri M. A., 37:287.

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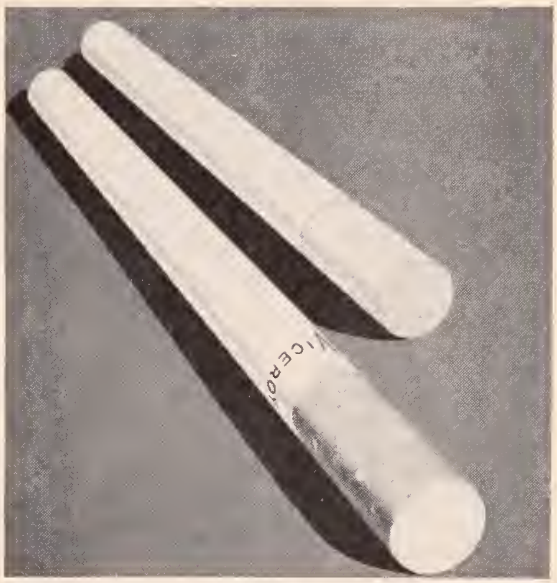


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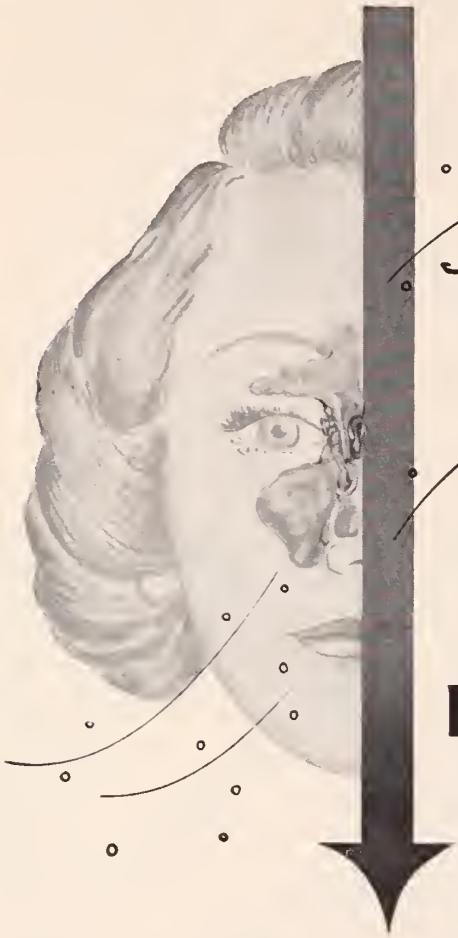


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1. Van Alyea, O. E., and Donnelly, Allen: *Arch. Otolaryng.*, 49:234, Feb., 1949.

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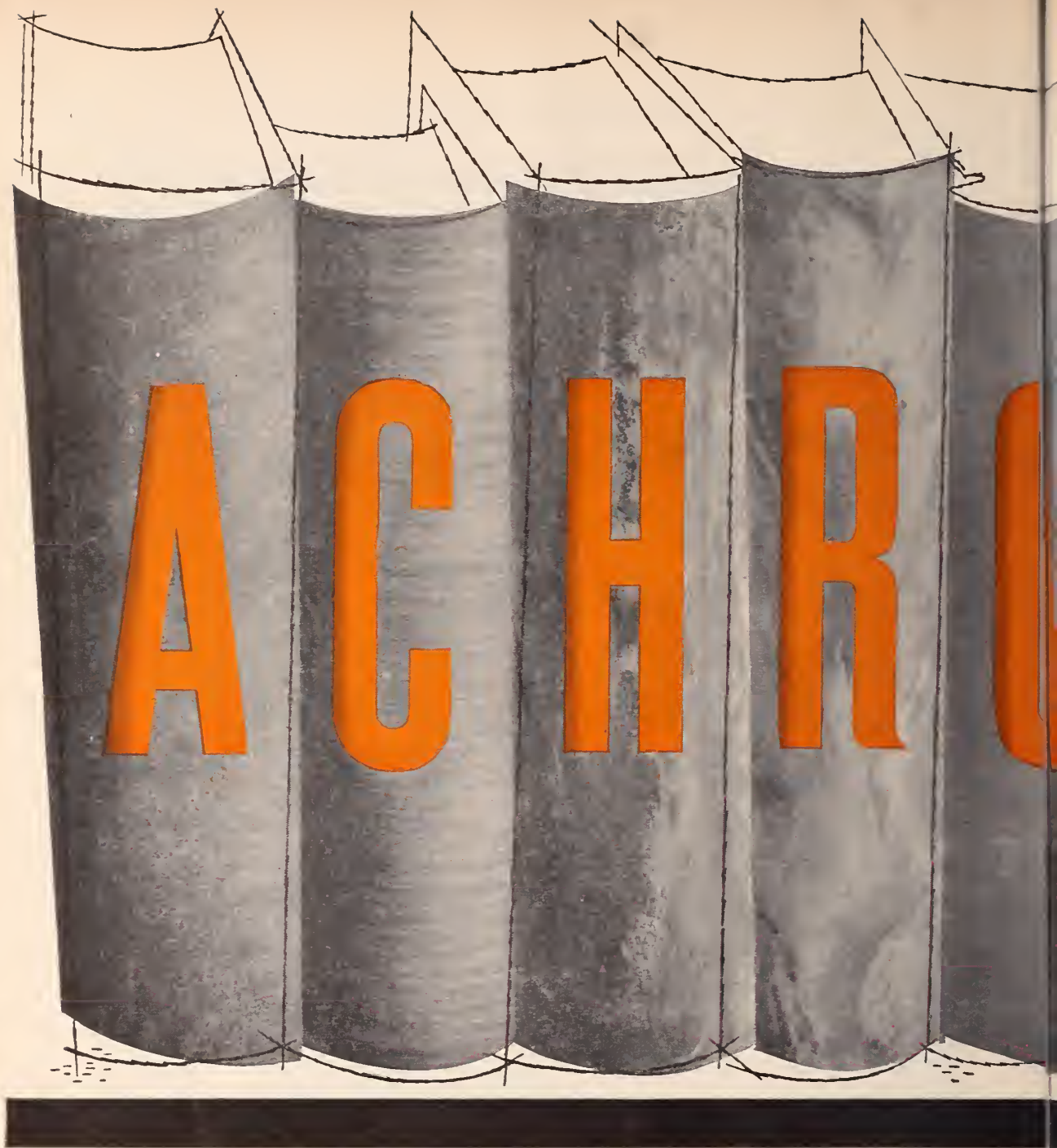
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2. Malleson, J.: Lancet *2*:158 (July 25) 1953.
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16 mm., color, sound, showing time 28 minutes. Produced in 1953 by Tele-Programs, New York, for the American Cancer Society. Procurable on loan from local units of the American Cancer Society.

This is a documentary film presenting distinguished investigators in five avenues of research. It is narrated by Dr. Charles S. Cameron of the American Cancer Society. Beginning with Mendel's experiments in heredity, Dr. Clarence C. Little explains in location-shooting his work in genetics, which has established the extent of genetic and chromosomal influences on the development of certain animal cancers. From genetics the story then goes to the work in the field of hormones. Dr. Charles Huggins of the University of Chicago demonstrates some of his work in this field. From hormones the next step is to a study of carcinogens. Dr. Lewis F. Fieser, Sheldon Emery Professor of Organic Chemistry at Harvard, explains his work in a study of the structure of chemical compounds that produce cancer and his current work in seeking steroids related to cholesterol formed within the body, which may prove to be cancer producing. Then, chemotherapy is demonstrated by Dr. C. P. Rhoads of the Memorial Cancer Center, New York. Dr. John Bittner, Professor, Division of Cancer Biology, Medical School, University of Minnesota, explains his work in the field of heredity and virology, using his "mouse-milk" factor as proving the existence of a transmissible factor in the milk of mice, which apparently is responsible to some degree, for the development of mammary cancer in his animals. The cycle, as Dr. Cameron explains, is but a short step from the heredity factor to the Mendelian theory.

This is an excellent picture, and it should raise a hope instead of inducing cancerphobia. In addition, it affords the viewer an opportunity to hear about progress in cancer research and the arising hope of cancer cure from the lips of experienced researchers in the field, men whose names are well known internationally. The use of nonprofessional actors lends authenticity to the presentation. As a film production, it is very well done and it can be recommended for lay audiences.

* Reprinted from the
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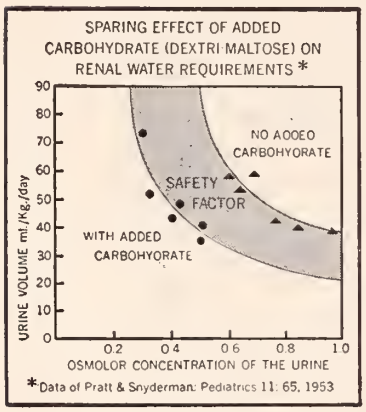
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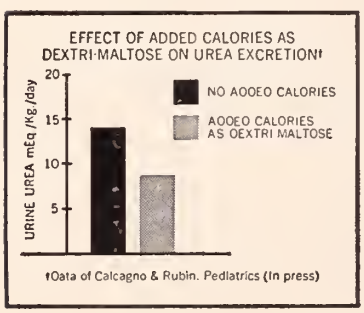
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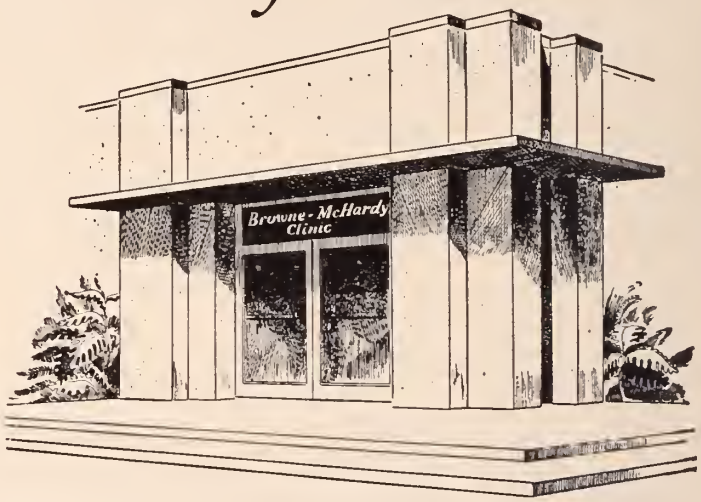
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(1) Kirby, W. M. M.; Waddington, W. S., & Doornink, G. M.: Antibiotics Annual, 1953-1954, New York, Medical Encyclopedia, Inc., 1953, p. 285.
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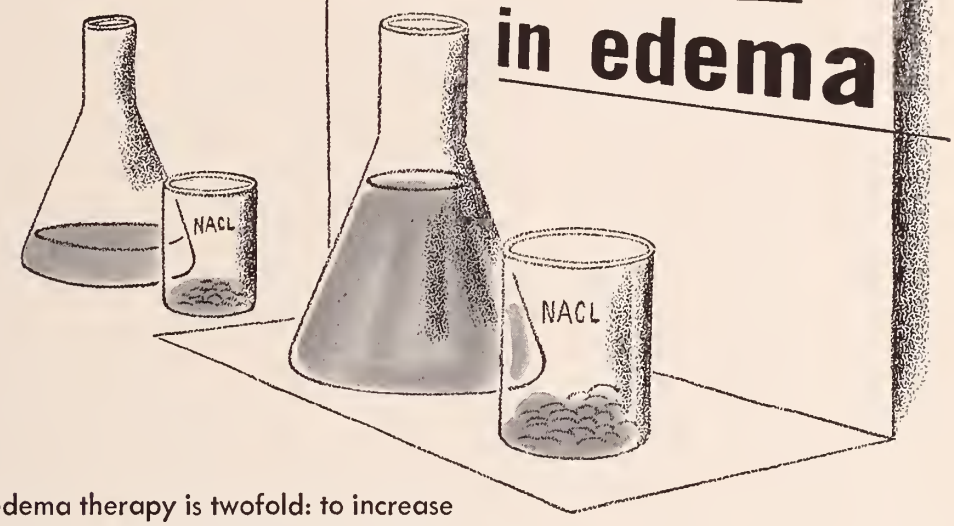
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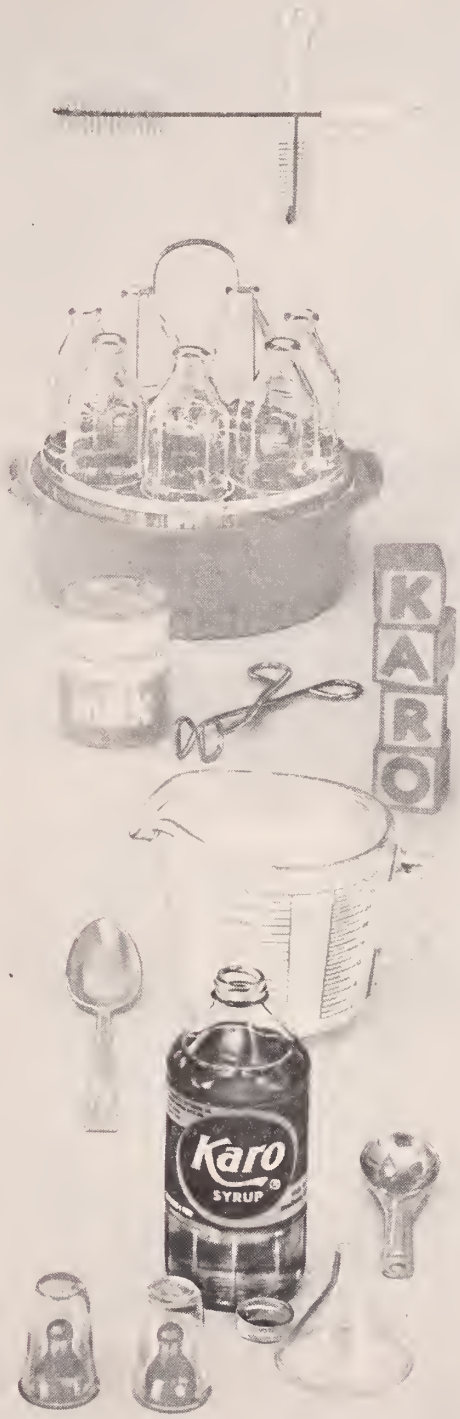
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BENIGN PANCREATIC DISEASE *

CHARLES B. PUESTOW, M. D. †
CHICAGO, ILLINOIS

Benign pancreatic disease is being discussed extensively in the medical literature and its incidence seems to be increasing in frequency. This is particularly true of pancreatitis. I believe we are recognizing acute pancreatitis more frequently, not in the operating room but at the patient's bedside. This is fortunate because acute pancreatitis responds better to conservative therapy than to operative intervention. The incidence of chronic relapsing pancreatitis seems to be increasing and is presenting a difficult therapeutic problem. Pancreatitis may be secondary to diseases of adjacent structures, particularly of the biliary tract, occasionally to peptic ulcer and to any lesion which may interfere with the free flow of pancreatic secretion. Where pancreatic disease is secondary to a pathologic condition which can be removed or cured, such treatment may be followed by recovery of the pancreas. If we do not find or treat the primary disease, it is often difficult to cure the inflammatory changes in the pancreas. Pancreatitis as a primary condition may result from certain dietary habits or the ingestion of toxic agents. Alcohol is considered to be an important etiologic factor. Careful questioning of our patients revealed that most of them consumed fairly large amounts of alcohol but it was interesting to note that the quality of the alcohol was poor and we believe that many of the beverages contained some wood alcohol.

The relationship of inflammatory disease of the extrahepatic biliary tract and of the pancreas has produced considerable controversy in the medical literature. The reflux of bile into the pancreatic ducts as a cause of pancreatitis is stressed by some authors and denied by others. I personally feel that if infection exists in the biliary tract it can be transmitted to the pancreas, possibly through the ducts or by way of the lymphatics. If infection is not present in the biliary tract, I am not convinced that a reflux of bile into the pancreatic ducts can produce an acute pancreatitis. In the experimental animal, the injection of bile into the pancreatic ducts did not produce pancreatitis unless it was administered at a very high pressure, far greater than the secretory pressure of the liver. Therefore, it does not seem physiologically possible for reflux of normal bile to sufficiently disrupt the small ducts within the pancreas to produce an acute pancreatitis. The theory that the reflux of bile into the pancreatic ducts produces pancreatitis is the basis for the operation sphincterotomy as a treatment for chronic pancreatitis. Although I am not convinced of the rationale of this procedure, I occasionally employ it when no other etiologic factor is apparent. Our experimental studies have lead us to believe that removal of the gallbladder causes a loss of the tonus of the sphincter

* Presented at the Sixth Annual Meeting of the Surgical Association of Louisiana, November 15, 1953, in New Orleans.

† Clinical Professor of Surgery, University of Illinois College of Medicine; Chief of Surgery, Henrotin Hospital, Chicago, Illinois; Chief, Surgical Service, Veterans Administration Hospital, Hines, Illinois.

of Oddi with a resultant drop in intraductal pressure and prevents future spasm of the sphincter. For this reason, if I perform a sphincterotomy, I also remove the gallbladder even though it does not appear to be diseased because pancreatitis is such a difficult disease to cure and its complications may be so serious that we must do everything possible to eradicate it in its early stages.

PANCREATIC CYSTS

Today I wish to talk mainly of complications of chronic relapsing pancreatitis. A relatively frequent complication is the development of pancreatic cysts. During the past year we have treated 13 patients for this complication. We will discuss the various types of treatment and the need for individualized therapy of each patient.

Diagnosis.—The diagnosis of pancreatic cysts is based upon a history of pancreatitis, often with recurring attacks, with increased serum amylase and lipase during the attack and then with gradual development of a mass. Pancreatic cysts result from a partial occlusion of a pancreatic duct, generally the main pancreatic duct. There are other kinds of pancreatic cysts but I am going to talk about the two that are associated with pancreatic inflammation, namely, retention cysts and pseudocysts.

Retention cysts result from a gradual dilatation of a pancreatic duct because of incomplete occlusion and you have in these cysts a lining of the ductal epithelium. A pseudocyst results from a leak of pancreatic juice into the pancreas or the surrounding tissues with the formation of a cyst, the wall of which is made of fibrous tissue forming as a result of the reaction to the escaping pancreatic juice. These may present in a number of locations in the abdomen. The escaped pancreatic fluid travels in the line of least resistance and usually enters the left upper abdomen or occasionally will extend mainly to the right. Cysts sometimes are present in the lower abdomen.

X-ray studies of the gastrointestinal tract and of the urinary tract are important in establishing the diagnosis of pancreatic cysts and in determining their location and relationship to surrounding structures.

Figure 1 shows an anteroposterior roentgenogram demonstrating displacement of barium in the midportion of the stomach due to a large retrogastric pancreatic cyst.



Figure 1. — Anteroposterior roentgenogram showing displacement of barium in stomach due to pressure of retrogastric pancreatic cyst.

Figure 2 is a lateral view of the same patient showing the stomach displaced forward and against the anterior abdominal wall. Such lateral views are essential to differentiate between retrogastric pancreatic cysts and tumors of the left lobe of the liver. The latter will displace the stomach posteriorly.

Figure 3 demonstrates a pancreatic cyst which has arisen from the head of the pancreas and presents itself mainly to the right of the midline. It has markedly increased the diameter of the duodenal sweep.

One must rule out the possibility of a



Figure 2.—Lateral roentgenogram showing large retrogastric pancreatic cyst.



Figure 3.—Pancreatic cyst arising from head of pancreas and increasing duodenal sweep.

kidney tumor and if there is a question of diagnosis, a pyelogram should be obtained. Figure 4 shows a large tumor mass in the left abdomen displacing the colon to the right. It was cystic in feel and suggested a pancreatic cyst. However, the pyelogram



Figure 4. — Roentgenogram showing large rounded mass in left abdomen.

shown in Figure 5 reveals a markedly dilated kidney pelvis, and aided in the establishment of the diagnosis of a large cystic kidney.

Treatment.—The treatment of pancreatic cysts is primarily surgical. In contemplating the type of operation to be performed we must be guided by what we wish to accomplish. We desire to get rid of the cyst and thus abolish pressure on adjacent organs and we wish also to restore to the gastrointestinal tract as much pancreatic secretion as is possible. We are dealing with an organ which is generally diseased throughout and whose physiologic functions are greatly impaired. If we diminish the functions of this organ we are



Figure 5.—Pyelogram showing markedly enlarged left kidney pelvis.

likely to prolong recovery, increase the period of hospitalization, and may end up with a patient who is a pancreatic invalid. Until recent years, pancreatic cysts were treated mainly by marsupialization and drainage. The abdomen was opened through an incision over the cyst. The anterior wall of the cyst was incised and its contents aspirated. Drains were placed in the cyst, the edges of the opening of the cyst were sutured to the parietal peritoneum and the abdominal wall was closed around the drains. Pseudocysts treated in this manner frequently became totally obliterated. However, drainage often persisted for long periods of time, healing was slow, and marked debility was common. Retention cysts drained to the surface often maintained persistent draining sinuses yielding pure pancreatic juice. When this complication occurred, it was necessary to resect the sinus tract and either transplant it into the gastrointestinal tract or resect the tail of the pancreas to a point slightly to the right of the origin of the fistula. Such a resection is satisfactory if the fistula arises close to the tail of the pancreas so that little pancreatic tissue need be sacrificed. If, however, the fistula arises from the body or head of the pancreas, transplantation of the tract into the gastrointestinal tract is more satisfactory because no pancreatic tissue need be sacrificed.

Internal drainage of pancreatic cysts has proved very satisfactory. By anastomosing the cyst to the stomach or upper small bowel, all pancreatic secretions escaping into the cyst will eventually pass into the gastrointestinal tract. Their aid to digestion permits maximum nutritional benefits and a more rapid recovery of the patient. The abdominal wound can be closed without drainage and usually heals as rapidly as other abdominal wounds. The length of hospitalization can be greatly shortened and the patient returned to his normal activities at an early date. The type of anastomosis should be determined by the location of the cyst and the anatomic relationship encountered in each individual patient.

Figure 6 demonstrates one method of

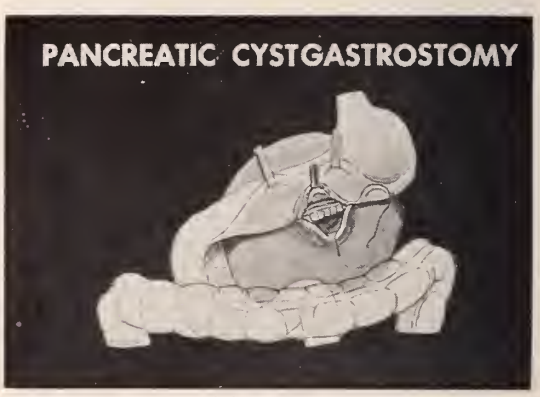


Figure 6

performing the pancreatic cystogastrostomy. Here the stomach is elevated after dividing the gastrocolic omentum. A direct anastomosis is made between the posterior wall of the stomach and the anterior wall of the cyst. This operation also may be performed by a transgastric approach. In this operation an incision is

made in the anterior wall of the stomach, following which the posterior wall is incised from within and the cyst cavity entered. The anastomosis is established and the opening in the anterior wall of the stomach is closed. The theoretical possibility of gastric contents entering the cyst cavity and producing a retrogastric abscess causes me to be somewhat apprehensive of this operation. However, experience in our hands, as well as those of other surgeons, has not justified this fear. We have found that barium, given by mouth three to four weeks after operation, does not enter the cyst, indicating that the cavity has probably become obliterated.

Pancreatic cysts may be drained into the jejunum. A direct side-to-side anastomosis has the disadvantage of permitting intestinal contents to enter the cyst. For this reason we prefer the Roux-Y type of pancreatic cystojejunostomy as shown in Figure 7. The principal steps of this operation are as follows: The abdominal wall should be opened over the cyst. A portion of the anterior wall of the cyst should be exposed by carefully dissecting overlying structures from it. Most cysts can be reached by dividing the gastrocolic omentum over them and elevating the stomach. Occasionally, they may be approached through the transverse mesocolon. Rarely, they are most accessible through the gastrohepatic omentum. Before incising the cyst it is important to determine the nature of its contents by careful aspiration. Rarely, an aneurysm of the abdominal aorta may simulate a pancreatic cyst and the differential diagnosis is established by aspiration.

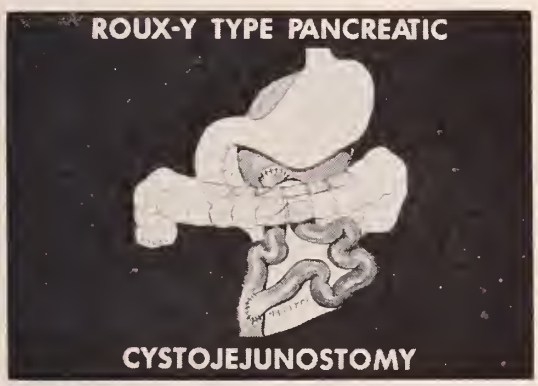


Figure 7

An incision is now made in the anterior cyst wall of a length desired for the lumen of the anastomosis. The contents of the cyst should be thoroughly aspirated and a search should be made for secondary cysts. If any are found they should be opened into the main cyst cavity. The jejunum is now followed down from the ligament of Treitz for a distance of 12 to 15 inches and a point for division selected between two arteries of a primary arcade. The bowel and its mesentery are divided to the root between the clamps. The distal end of divided bowel is brought up through an opening in the transverse mesocolon to the incision in the pancreatic cyst. An end-to-side anastomosis between this segment of bowel and the pancreatic cyst is performed using an outer row of cotton sutures and an inner row of continuous catgut. It is well to oblique the opening in the small bowel to be sure of an adequate lumen. The proximal end of the divided jejunum is anastomosed to the distal limb of jejunum about 12 inches below the site of the pancreatic cystojejunostomy. This is an oblique end-to-side anastomosis which is accomplished with two rows of intestinal catgut. It is well to suture the free edge of the mesentery of the proximal jejunal segment to the mesentery of the distal segment to obliterate an opening through which an internal hernia could form. This operation establishes drainage from the pancreatic cyst into a segment of jejunum whose peristalsis runs downward from the cyst and prevents regurgitation of intestinal contents into the cyst cavity. Pancreatic secretions which enter the cyst pass into the upper intestinal tract to aid in digestion. The abdominal wound can be closed in layers without drainage.

Occasionally, the treatment of pancreatic cysts must be individualized. A recently operated patient exemplifies this. He had a cyst in the right upper quadrant. Figure 8 is a diagram of what we en-

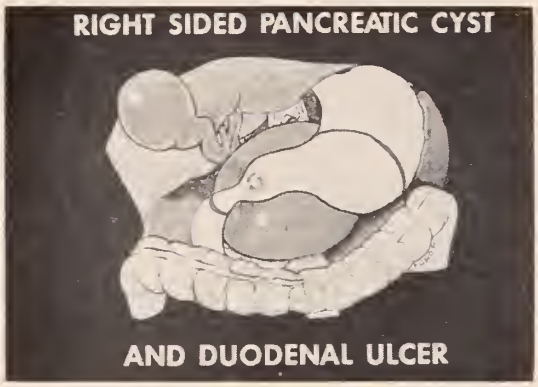


Figure 8

countered. A pancreatic cyst was found under the pylorus and duodenum compressing the common duct and producing an obstructive jaundice. The patient also had a duodenal ulcer with obstruction. Thus, we were dealing with three conditions; a pancreatic cyst, a peptic ulcer with obstruction, and obstructive jaundice. Figure 9 shows how this particular problem

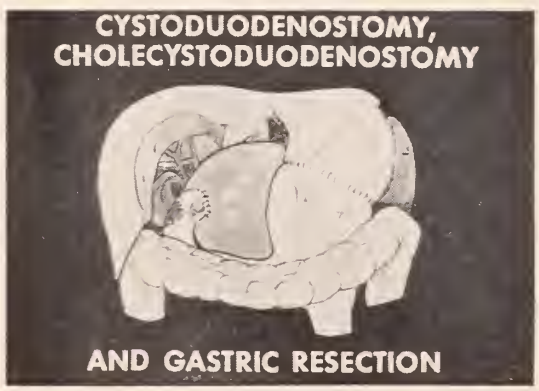


Figure 9

was handled. We divided the pylorus and anastomosed the distal end of the duodenum to the pancreatic cyst, then performed a subtotal gastric resection and a gastrojejunostomy and then, because we were not sure that the release of pressure on the common duct would correct the obstructive jaundice, we performed a cholecystoduodenostomy. This patient has gotten along well and has had no symptoms since that time.

Occasionally, pancreatic cysts can be totally extirpated. This procedure was performed on a patient who presented a very interesting problem. He came to our chest service because of fluid in the left chest cavity. Aspiration produced fluid which on analysis was found to have a very high amylase content. Figure 10 is a roentgenogram obtained after aspiration. The needle evidently had pierced the diaphragm and had entered a pancreatic cyst permitting air to enter it. This demonstrated the cyst with air in its upper portion and the stomach displaced medially and downward.



Figure 10.—Roentgenogram showing pancreatic cyst partly filled with air and displacing the stomach downward and medially.

Figure 11 shows the condition which we

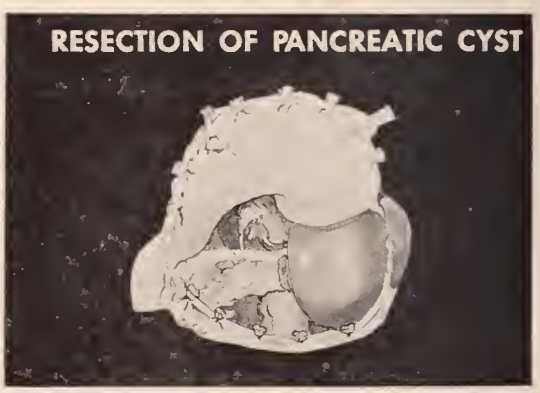


Figure 11

encountered. A retention cyst arising from the tail of the pancreas lay in the hilus of the spleen. As it could be completely mobilized, we performed a total excision of the cyst with the spleen and the tail of the pancreas. Excision of pancreatic cysts cannot often be accomplished and should not be attempted if they arise from the head of the pancreas.

Pancreatic cysts may be very extensive. One patient had a pancreatic cyst which filled the entire peritoneal cavity. This patient was so debilitated that he was unable to raise his arms. We obtained nearly six quarts of pancreatic fluid from his peritoneal cavity. After drainage the patient improved, the drainage stopped, he gradually gained in weight and strength and returned home. He was admitted to another hospital two years later in a badly emaciated state, died, and at autopsy, the pancreas was totally replaced by fibrous tissue.

PANCREATIC LITHIASIS

Another complication of pancreatitis which is very discouraging is pancreatic lithiasis. Calcification may occur within the pancreatic ducts but is more frequently found diffusely spread throughout the substance of the gland. Both anteroposterior and lateral x-rays help to establish the diagnosis. The main symptoms consist of pain and evidences of pancreatic insufficiency. If calcification is confined to the tail of the pancreas, a subtotal resection may bring relief. If there is diffuse involvement of the gland, surgery of the pancreas has little to offer other than total extirpation, which should only be performed as a last resort.

PANCREATIC PAIN

The treatment of pancreatitis should be directed toward the ablation or removal of any contributing disease. When pancreatitis is advanced and is producing severe pain, we must direct our attention to relief of the patient's symptoms. The use of drugs for relief of pain must be minimized because of the danger of drug addiction. Continuous epidural anesthesia sometimes is followed by relief of pain for varying lengths of time. Splanchnic block often alleviates acute attacks and may benefit pancreatic pain of a more chronic nature. When these measures fail, operative procedures which interrupt the nervous pathways from the pancreas may be attempted. This is difficult to accomplish because of the multiplicity of nervous pathways. Sensory fibers may extend through the sympathetic chain, the splanchnic nerves, the vagi, the intercostal nerves and numerous visceral fibers. As it is impossible to section all the nervous pathways to the pancreas, the simpler procedures are used first and the more radical ones reserved for those patients who fail to respond. As most of the pancreas lies to the left of the midline, left sided operations usually are performed first. Limited lumbodorsal sympathectomy and splanchnectomy occasionally will remove pancreatic pain. If operation on the left is followed by a recurrence of pain, the same procedure can be carried out on the right. However, we have done this and had the patient again have recurrence of pain. We then attempt a more radical procedure through a transpleural approach removing the sympathetic chain all the way from the fourth thoracic to and including the first lumbar ganglia and the splanchnic nerves. A vagotomy may be performed at the same operation. This is drastic surgery to relieve pain but we are dealing with a drastic condition for which we have no satisfactory answer at the present time. It may be necessary to perform this operation bilaterally if the first side does not give relief. Another nerve operation that we have carried out a few times but which does not have too much promise is the subdiaphragmatic division of the splanchnic nerves. We would not attempt this procedure were we not planning to explore the abdomen to determine whether or not some disease exists which is affecting the pancreas.

SUMMARY

Pancreatitis and its complications present some of the most difficult therapeutic problems encountered in medicine. I hope

that some of our research centers will be able to find a better answer to the cause of this disease and to methods of preventing its development as well as improved therapeutic procedures.

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ACUTE ABDOMINAL EMERGENCIES *

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To present a comprehensive paper on acute abdominal emergencies would consume considerably more than the short time allotted here. It is not the purpose of this paper to present any elaborate classification. As a matter of fact a number of the more common acute abdominal conditions will be obvious by their omission. I wish, however, to present several cases which have come under my observation and fall into this category. They will be considered in the following groups:

I. Complications from Gall Stones.
II. Perforated Peptic Ulcer.
III. Upper G-I Hemorrhage.
IV. Obstructive Lesions.
V. Conditions Erroneously Diagnosed as Appendicitis.

I—COMPLICATIONS FROM GALL STONES

Much has been written regarding gall stone colic and so-called silent gall stones. As physicians, I think it is our responsibility to impress upon our patients the necessity for cholecystectomy when gall stones are found on routine examination. In the absence of symptoms this may be particularly difficult.

The following cases show three of the complications which may develop when this advice goes unheeded.

Case No. 1.—Miss J. R. A 50 year old white female admitted to St. Edwards Hospital, February 23, 1954, first seen in consultation at the Clinic one year previously with multiple nonopaque gall stones. Surgery was advised and refused. Since November 1953, the patient had had six episodes of gall bladder colic. The present attack started four days prior to admission, with a feeling of bloating in the upper abdomen and nausea. Two days prior to admission there was moderately severe pain in the epigastrium, requiring hypodermic medication for relief. On admission pain was noted in the right upper quadrant on deep breathing. There had been no jaundice or acholic stools.

Physical examination was essentially negative except for right upper quadrant tenderness and some muscle spasm. Temperature 100°F. WBC 32,000 with 96 per cent polys.

The patient was prepared for surgery. At operation, the gall bladder was found to be markedly distended, the serosa thickened, edematous, and acutely inflamed. A stone was wedged in the gall bladder ampulla, but the cystic and common ducts were perfectly normal. Routine cholecystectomy was done.

The postoperative course was without incident.

We have no fixed time during which these patients with acute cholecystitis should be operated upon, but would prefer to get them within the first three days of onset of symptoms. Technically the procedure is easier during this time. Certainly without previous observation one cannot rule out the possibility of a high lying acute appendix.

Case No. 2.—A 52 year old white female was seen at the Clinic one year prior to her admission to the hospital and a diagnosis of cholelithiasis was made. Again surgery was advised and refused. On admission the patient had been having upper right quadrant pain of one week's duration. The day prior to admission the family noted that the patient was jaundiced. The stools had been acholic for several days. A diagnosis of obstructive jaundice due to gall stones was made. At operation three stones were removed from the common duct and routine cholecystectomy done.

Case No. 3. Mrs. J. W. C., a 59 year old white female was admitted May 24, 1952, complaining of severe generalized abdominal cramps of two weeks' duration, associated with rumbling and gurgling of the intestine, but no change in bowel habit. Intermittent vomiting had been present.

Examination revealed an obese white female with general abdominal tenderness, more marked in the left lower quadrant and suprapubic regions. Vomiting was not relieved by gastric suction. The patient was prepared for surgery and at operation a large gall stone was removed from the small bowel about 60 inches below Treitz ligament. There were dense recent adhesions between the gall bladder and the second portion of the duodenum. These were not disturbed. The patient was to return in six months for cholecystectomy, but was not seen again until January 1, 1954, when she was admitted with pain in the right upper quadrant of one week's duration. Since the acute symptoms were subsiding at the time of admission, the patient was released and re-admitted for cholecystectomy February 14, 1954.

* Presented at the Seventy-fourth Annual Meeting of the Louisiana State Medical Society, May 21, 1954, in New Orleans.

At operation the gall bladder was thickened and contracted. Dense adhesions to the second portion of the duodenum were encountered, but the fistulous opening in the mucosa had closed. The small serosal defect in the duodenum was closed with three interrupted sutures. Removal of the gall bladder was done without incident.

Cholecystectomy at the initial operation might have seemed to be the procedure of choice. However, it would have added greatly to the risk and duodenal fistula might well have developed.

II—PERFORATED PEPTIC ULCER

The diagnosis of perforated peptic ulcer usually presents no problem. The onset of pain is dramatic and continuous. Shoulder pain when present is helpful. On examination the board-like abdomen is classical. In my experience if air is to be seen under the diaphragm on x-ray, I have almost always been able to demonstrate the absence of liver dullness on percussion. In patients that are too sick to be taken to the x-ray department, one may turn the patient on his left side and then with the portable unit take an A-P film. Air if present can then be seen between the right lobe of the liver and the lateral abdominal wall.

Today we have four accepted methods of treatment:

1. Nonoperative.
2. Simple closure.
3. Delayed primary gastrectomy.
4. Primary gastrectomy.

1. NON-OPERATIVE TREATMENT

Seeley [1] reported 106 cases of perforated ulcer treated nonsurgically by continuous gastric suction with 1 death, a mortality rate of 0.9 per cent. His good results have not been duplicated by others. This is due to two factors: Seeley's patients were all under military control. There were special teams in constant attendance to keep the Levine tubes open and draining. The average age of his patients was about ten years younger than other reported series. Morbidity referable to intra-abdominal abscess is higher than in other reported operative series. Certainly one is able to substantiate his diagnosis only at the operating table. One cannot tell which patient has a perforated carcinoma or which patient has the large perforation which will not seal off. This method is mentioned only to be condemned for routine use. It should be reserved for the patient in which the diagnosis is uncertain, or in the patient that is too ill to undergo surgery.

I have had the misfortune of treating 1 patient by this method. I first saw him twenty-seven hours after his perforation. At that time he had a generalized peritonitis and was not considered to be any kind of a surgical risk. The gastric suction which had already been started by another doctor was continued. Postmortem examination showed a large 1 cm. diameter opening in the anterior duodenal wall which had made no attempt to seal itself off.

2. SIMPLE CLOSURE

Simple closure according to Beahrs [2] from the Mayo Clinic, is the treatment of choice in most instances. Of 114 surgically treated cases 99 simple closures were done with an over-all mortality of 2.6 per cent. Certainly, in average hands it is the most simple procedure and will save more lives.

3. DELAYED PRIMARY GASTRECTOMY

Delayed primary gastrectomy as advocated by Dodson [3] is a good procedure. It allows the patient to recover from his peritoneal infection. Gastrectomy is done during the same period of hospitalization. It does, however, subject the patient to a second procedure, and prolonged hospitalization.

4. PRIMARY GASTRECTOMY

DeBakey [4] and his group at Houston reported 47 cases in which immediate gastrectomy was done for gastroduodenal perforation. There was only one death, a mortality of 2.1 per cent. The only selection of cases was that, in the opinion of the surgeon, the patient's general condition would permit gastrectomy.

As is stated in this paper, 35 per cent of patients with perforated ulcer will require further surgery. To put it another way, 65 per cent will not. However, to me primary gastrectomy in these patients is a good and justifiable procedure, if the patient is seen early, and provided that

from the history given the patient would fulfill the requirements for gastrectomy had perforation not occurred.

III—UPPER G-I HEMORRHAGE

Upper gastrointestinal hemorrhage is potentially a serious problem. In our group these patients are followed jointly by the medical and surgical staff. If the patient is past 45 years of age he is certainly more apt to continue bleeding than if he falls into the younger age group. If bleeding continues or a second hemorrhage ensues, then surgery is advised. In the recent past the old maxim that surgery in bleeding ulcers must be done within forty-eight hours no longer holds true.

Case No. 1.—Mr. D. P., a white male, 73 years of age, was admitted to the hospital, November 23, 1948, with a history of indigestion of thirty years' duration. Six months prior to admission he had a gastric hemorrhage and was confined to bed for four weeks. Two weeks prior to admission a second hemorrhage occurred and the patient continued to pass tarry stools. His only complaints were weakness, dyspnea and palpitation.

Examination revealed an elderly, emaciated, acutely ill male, with marked pallor to the skin. There was slight fullness in the upper abdomen and slight epigastric tenderness: hemoglobin 58 per cent. X-ray examination showed marked pyloric obstruction, but no other lesion. On the tenth hospital day and after 2500 cc. of blood the hemoglobin had dropped from the 58 per cent level on admission down to 53 per cent. The patient and family who up to this time had been hesitant to have any surgery done now gave their consent. The following day subtotal gastrectomy was done. During and following the procedure 2000 cc. of whole blood were given. The postoperative course was uneventful except for a small hematoma which developed in the wound.

Case No. 2.—The next patient, Mrs. J. H., a white female, age 56, had been well except for occasional indigestion over the past fifteen years. A clinical diagnosis of duodenal ulcer was made fifteen years before, but was never demonstrated on x-ray. The patient was enjoying her usual health until she awakened about 2:30 a.m., November 3, 1949. She became nauseated and vomited a large quantity of bright red blood and fainted.

She was admitted to the hospital in a state of moderately severe shock, but complaining of severe epigastric pain. Her hemoglobin shortly after admission was 55 per cent. She was treated medically and on the fourth day of hospitalization was seen in consultation. Gastrectomy was advised, but the bleeding had apparently stopped. On the sixteenth day of hospitalization the patient had another severe hemorrhage. Again she complained of epigastric pain. She was seen in consultation and again gastrectomy advised. The patient was type 40 Rh negative, and as soon as adequate blood could be made available surgery was carried out.

Exploration of the stomach, duodenum, lower esophagus, liver and spleen were all normal. Regardless of the normal findings an empirical gastrectomy was done, about four-fifths of the stomach and proximal duodenum being removed. Upon opening the operative specimen no lesion was encountered.

The patient did well postoperatively until her second day when she had another severe hematemesis and the blood pressure dropped to zero. Again she complained of epigastric pain. Her blood presure was restored and the bleeding ceased after administration of 1250 cc. of whole blood. On the sixth postoperative day the patient had a large tarry stool. At this time a double balloon Patton tube was passed for compression of the lower esophagus. The following day bleeding recurred and continued actively until she finally became exsanguinated. The slide of the autopsy specimen showed a fistula between the esophagus and ascending aorta. The opening was covered by a very thin membranous-like structure. The patient's serology was negative and no evidence of syphilis was encountered in any of the other organs. We believe the patient had a peptic ulcer of the esophagus that eroded through into the aorta.

Case No. 3.—C. N., a 67 year old colored male, admitted to the hospital July 18, 1953, complaining of weakness, vomiting blood and passing bloody stools for three weeks. Epigastric pain worse after eating and at night, had been present for three years. Moderate epigastric tenderness was present. Hemoglobin was 38 per cent on admission. Bleeding stopped and the patient was being prepared for gastrectomy when on the seventh day following admission perforation of the large gastric ulcer occurred. A Levine tube was passed and connected to suction. The patient was operated upon within three hours after perforation and subtotal gastrectomy done. The postoperative course was complicated by wound separation on the tenth day following three days of rather violent hiccoughs.

IV—OBSTRUCTIVE LESIONS

Case No. 1.—F. W., a white female infant, 16 days of age, admitted to St. Edward's Hospital February 23, 1952. The birth weight was 5 pounds. On the fourth day of life the child began to have projectile vomiting of yellow-green fluid. Small daily bowel movements had continued. Admission weight was 4 pounds, 2 ounces.

Examination was not remarkable except for extreme emaciation. There was no distention, peristaltic wave, or palpable tumor. Supportive fluids and transfusions were given and on March 1, 1952, under open drop ether the abdomen was opened

through a right rectus incision. The duodenum was found to be dilated to about four times its normal diameter down to a point just proximal to Treitz ligament. Distally the bowel was about normal diameter. A side-to-side retrocolic anastamosis was done between the dilated duodenum and the proximal jejunum. The child was seen within the past six months and has developed normally.

Case No. 2.—R. B., a 15 year old white male, admitted February 3, 1948, with a history of sudden onset of severe cramplike lower abdominal pain followed almost immediately by vomiting. He was seen in a state of mild shock. He was given dilaudid without relief. Examination revealed an elongated, soft, exquisitely tender mass in the left lower quadrant, which had become appreciably larger than on previous examination an hour before. Visible peristalsis was seen through the thin abdominal wall. Bowel sounds were markedly increased. The total white count was 23,000.

At operation an intussusception of the midileum was encountered, about 18 inches of the bowel being involved. After reduction the lead point was found to be a 4 cm. diameter polyp with a broad base attached to the mesenteric side of the bowel. A 5 cm. length of the bowel was resected along with the polyp and an end-to-end anastamosis done. The pathological report was benign polyp.

The interim history on this patient has been interesting. He had no complaints until December 1, 1951, when he began having occasional cramplike right lower quadrant pain lasting five to ten minutes. There had been about six such attacks up to the time of admission on March 12, 1952. At this time there was slight lower abdominal distention. A clinical diagnosis of partial small bowel obstruction was made and confirmed by x-ray examination. At operation the following day a compound ileo-ileal, ileocecal intussusception was encountered. The lead point for this intussusception was a large polypoid tumor. The remainder of the small bowel up to the ligament of Treitz was carefully examined and three other polypi were encountered, along with seven other intussusceptions. The smaller polypi were removed by ileotomy and the larger one was, of course, resected. The report on the large polyp was adenocarcinoma without invasion of the lymph nodes or blood vessels. This patient has remained well to date.

Case No. 3.—Mrs. G. E. B., a white female, age 42, was admitted to the hospital September 3, 1951, with a history of colicky abdominal pain of eighteen hours' duration. At 5 o'clock that afternoon an enema was taken with considerable relief. The pain returned three hours later, became more severe and was confined to the lower abdomen. Examination revealed slight fullness in the midabdomen just to the left of the midline. There was moderate rebound tenderness at this point. Peristalsis was intermittent and came in rather loud rushes. Temperature 99; pulse rate 100; total white count 10,000, with a normal differential. X-ray examination showed a single distended loop. A diagnosis of complete small bowel obstruction was made. At operation a band-like adhesion was divided and the obstruction relieved. The postoperative course was uneventful and the patient was released on the tenth postoperative day. Certainly in this type of patient one has nothing to gain by procrastination.

Before leaving this group I would like to comment on the low-lying large bowel obstructive lesion in a patient with a competent ileocecal valve. This produces a closed loop obstruction. Such distention of the colon may rapidly advance to the point at which gangrene and perforation may occur. Certainly one must be aware of such situations and be prepared to do colostomies as emergency procedures.

V—LESIONS ERRONEOUSLY DIAGNOSED APPENDICITIS

Many of us have seen patients with all the signs and symptoms of acute appendicitis and at operation have been confronted with an entirely unsuspected situation.

Case No. 1.—Miss M. W., a 21 year old white female was admitted December 8, 1953. She was awakened at 3 a.m. that day with cramplike epigastric and right upper quadrant pain. Symptoms were aggravated by walking. Temperature 100° F. and W. B. C. 14,000 with 84 per cent polys. Examination was negative except for marked tenderness in the right abdomen, most prominent lateral to the umbilicus. Moderate muscle guarding was present.

At operation a 4 cm. diameter inflammatory mass was encountered on the medial wall of the ascending colon just above the cecum. The omentum was densely adherent to it. On palpation an indurated ulcerating lesion of the colon was thought to be present. Along the ileum were five widely separated milk white subserosal patches 5 to 8 mm. in diameter. An operative diagnosis of regional enterocolitis was made and right colectomy done. The pathological report showed active inflammation in the muscularis and subserosal connective tissue with multiple small abscess cavities with localized peritonitis. No diverticulum was seen.

Case No. 2.—H.H. 57 year old white male, admitted March 17, 1954, with a history of general cramplike pain, nausea and vomiting. Nine hours later the pain localized in the right lower quadrant. Marked tenderness, rebound tenderness, and rigidity were present in the right lower quadrant. At operation by another surgeon a large inflam-

matory mass was found in the ileocecal region. The central portion included the cecum which presented an area of gangrene and perforation. The appendix was not seen. The opening was closed and the area drained. A biopsy taken showed adenocarcinoma. Ten days later after adequate preparation of the bowel right colectomy with primary anastamosis was done. The pathological report was adenocarcinoma of the cecum with invasion of the mesentery and regional lymph nodes.

Case No. 3.—A 4 year old child was seen with a history and physical findings typical of appendicitis. At operation the appendix was found perforated at its base and the head of a pin protruding from the opening.

A small perforated, slow leaking ulcer which has sealed itself off against the liver may present a typical picture of acute appendicitis. But if one has given up the McBurney incision, as I have, there is no cause for embarrassment.

Mesenteric adenitis in many instances cannot be differentiated from acute appendicitis. I have never in good conscience felt at all apologetic about finding such a condition at operation. I personally feel that the diagnosis of mesenteric adenitis is a good one to make, but that it should be confirmed at surgery. Appendectomy has never failed to "cure" these patients.

SUMMARY AND CONCLUSIONS

1. A plea is made for cholecystectomy in patients in whom a diagnosis of gall stones has been made. Early operation is advocated in acute cholecystitis. The procedure is technically less difficult at that time.

2. Simple closure for acute perforated ulcer is the safest procedure—can be done in any hospital by anyone doing surgery. Immediate gastrectomy is a good procedure in selected cases.

3. Subtotal gastrectomy is advised in patients who continue to bleed and while it is better done early, can be done any time adequate blood is available.

4. An unusual case of rupture of the aorta into the esophagus has been presented.

5. Early operation is mandatory in patients with single loop small bowel obstruction.

6. The McBurney incision is decried for patients in whom a diagnosis of acute appendicitus has been made. The diagnosis can be erroneous. If this proves to be true, complete exploration may be carried out through a rectus incision and if possible the true pathology dealt with.

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DIARRHEA IN INFANCY; ETIOLOGY AND TREATMENT *

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INTRODUCTION

The increase in world population since the birth of Christ has been twenty-fold. A major factor responsible for these changes has been the continuous decrease in mortality among infants and children. The decrease in death rate associated with diarrhea of infancy has contributed in a major manner and is perhaps the single most important factor in improving the chances of survival during infancy and early childhood. During the past fifty years there has been a phenomenal decrease in deaths associated with diarrhea; from 1903 to 1918, there were more deaths attributed to diarrhea during infancy than the combined deaths in all ages due to scarlet fever, typhoid fever, pertussis, measles, and diphtheria. In 1941 and in 1948, there were 12,000 deaths and 7,600 deaths, respectively, attributed to diarrhea during infancy. These impressive reductions have been associated with phenomenal changes in the clinical picture of diarrhea and can be attributed to the following factors:

1. Improvement in and simplification of infant feeding.

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2. Improvement in methods of sanitation.

3. A better knowledge of the disturbances in physiology, especially in fluid and electrolyte balance which occurs during diarrhea which has made adequate replacement possible.

4. The introduction of chemo and antibiotic therapy.

Nevertheless, approximately 8,000 deaths per year does not permit for complacency. We, as physicians, must be in a position to exercise modern management lest the mortality will be on the increase. All of us who treat infants and children are constantly presented with sporadic cases, and at times are required to participate in the management of outbreaks which reach epidemic proportions.

CLASSIFICATION

In the management of any abnormal state, and especially of diarrhea where the cause must be eradicated to effect a cure, an etiological classification is of great value. The following classification of diarrhea is therefore submitted:

Etiological Classification of Diarrhea

I. Mechanical
 1. Roughage
 Fruit
 Bran
 Vegetables, etc.
 2. Fat
 3. Laxatives
 4. Starvation

II. Chemical
 1. Fermentation of carbohydrates
 2. Allergic

III. Infections
 1. Primary or enteral
 (a) Viral
 1. Epidemic diarrhea of the newborn
 2. Diarrhea of infancy
 (b) Bacterial
 1. Shigella
 2. Salmonella
 Paratyphoid A and B
 Typhoid
 3. Staphylococcus
 4. Streptococcus
 5. Proteus
 Morgani
 Vulgaris
 6. *Ps. aeruginosa* (pyocyaneus)
 7. *Kleb. pneumonia* (Friedlander's)
 8. *B. paracolon*
 9. *E. coli*
 011
 055
 10. T. Bc.
 (c) Protozoa, etc.
 1. Ameba histolytica
 2. Nematodes
 3. Giardia
 2. Secondary (parenteral) associated with
 (a) Otitis media
 (b) Pharyngitis
 (c) Impetigo
 (d) Others

IV. Deranged metabolic states, food intolerances, deficiency states
 1. Celiac disturbances
 (a) Celiac diseases
 Fat intolerance
 Starch intolerance
 (b) Mucoviscidosis (cystic fibrosis of the pancreas)
 2. Sprue

THE MANAGEMENT OF DIARRHEA

This phase of the problem will be discussed from the standpoint of office and hospital management.

Office Management.—The vast majority of cases of diarrhea are treated in the physicians' offices or over the telephone. This group constitutes the milder form and generally is caused by mechanical and chemical factors, or may be associated with parenteral infection and low grade infections of the gastrointestinal tract.

It is important to appraise these patients carefully as to age, weight, frequency and character of the stools, presence of fever, the occurrence of vomiting, etc. Because of the acute onset and rapid downhill course which may occur in infants, careful consideration of the above factors is especially important in deciding

whether hospitalization is impending. A history of fever or any other indication of infection requires a physical examination and, therefore, excludes treatment by the telephone.

Paramount in the treatment should be the institution of measures to prevent dehydration and acidosis. The following solution which may be prepared with ease in the home has proven to be extremely useful in this respect:

Sodium chloride	½ to 1 teaspoonful
White karo	2 ounces
Water	1 quart

Milk feedings should be discontinued for twelve to twenty-four hours, and 3 to 4 ounces of this solution every three hours substituted for them. In case of vomiting it is recommended that ½ ounce (1 tablespoonful) of the above mixture be administered every fifteen minutes until 10 to 12 doses have been given; this is retained usually and may then be followed by the larger quantities as recommended above.

In addition to the above, it is essential to treat obvious infections with antibiotics, preferably penicillin, streptomycin, or the broad spectrum antibiotics such as terramycin and achromycin. It must be remembered that such treatment may interfere with stool cultures later and if there is a high index of suspicion of a primary intestinal infection, rectal swabs taken before antibiotic therapy and placed in saline should be sent to the laboratory for culture. Dependence upon these antibacterial agents at the expense of fluid administration as outlined is to be discouraged and may lead to undesirable results. Nonabsorbable chemotherapeutic and antibiotic agents in our experience are of limited value.

On the second day a formula consisting of 1 part skimmed milk and 1 or 2 parts water with 5 per cent added carbohydrate in quantities of 2 or 3 ounces may be alternated with the salt and karo mixture. On the third day 1:1 skimmed milk and water or 1:2 evaporated milk and water with 5 per cent added carbohydrate may be fed at three or four hours intervals. Older infants may be offered broth with crackers, toast or well-cooked rice along with strained orange juice and apple sauce.

Adsorbent and protective mixtures composed of kaolin and pectin with small doses of paregoric (one drop per month of age, not exceeding fifteen drops) at four to six hour intervals may be used in the office management of these cases.

Borderline Case.—Not infrequently, one encounters cases of such severity that hospitalization may be questionable; also certain cases may not be hospitalized because of financial reasons, unavailability of hospital facilities, etc. These patients will benefit by fluid, which may be administered in the office or the emergency room of the hospital, in addition to the karo and salt solution, especially if the latter is retained poorly. It is recommended that 100 cc. of 5 per cent glucose in distilled water be mixed with a similar quantity of lactated Ringer's solution (total volume 200 cc.) and be given in the thighs as a drip hypodermoclysis with hyaluronidase. The patient should be reevaluated in approximately twelve hours and the clysis repeated if necessary or be referred to a center where adequate facilities are available.

Hospital Management.—These patients constitute a severely ill group but vary in degree, being mildly severe, moderately severe, or critical.

In the management the following objectives should be achieved:

I. Correct the dehydration, anhydremia, hemoconcentration, shock, acidosis, and ketosis.

II. Combat primary and secondary infections

III. Place the gastrointestinal tract at rest

IV. Reinstitute oral feeding

V. Transfuse

VI. Correct or prevent vitamin deficiencies

SPECIFIC MEASURES

I. Correction of dehydration-acidosis, etc. These features of diarrhea (pathological physiological state) are re-

sponsible for the critical state into which these patients frequently fall, making them medical emergencies. The following solutions with a brief description are recommended for the correction of this phase of the disturbance.

1. One-sixth molar sodium-r-lactate. This solution is isotonic and combats acidosis by making sodium available. The lactate is metabolized to glucose, which combats ketosis and spares protein and electrolytes. Furthermore, it will combat the shock and improve circulation. In other words, although not a complete solution, it attacks several phases of the disturbed physiology in these patients simutaneously.
2. KCl/Ringer's Solution. This solution is composed of the following ingredients:

Potassium chloride	2.0 Gm.
Ringer's Solution	750.0 cc.
Distilled water	250.0 cc.
To make	1000.0 cc.

This solution contains 29 mEq/L of potassium chloride, 116 mEq/L of sodium, and 148 mEq/L of chloride. When administered as recommended below in combination with a sodium lactate, this solution furnishes potassium in a safe form which enters the cells where there is a deficit of this ion. If postassium is not administered and treatment consists of glucose, saline and sodium lactate alone, a greater deficit of potasssium with alkalosis will result. This potassium deficit contributes to the symptomatology by producing weakness, abdominal distention with nausea and vomiting; also the diarrhea may be exaggerated. A deficit of potassium may be detected by serial electrocardiography producing a depression or inversion of the T waves; a depression of the S-T segment; and a prolongation of the Q-T interval.

3. Lactate-Ringer's Solution (Hartmann's Solution). This is a buffered hypotonic Ringer's Solution with M/40 sodium lactate and is familiar to nearly all practitioners of medicine.
4. Glucose, 5 per cent, in distilled water. This solution is indicated for the following reasons:
 a. to replace water which has been lost from the body during the diarrhea;
 b. as a source of water for the formation of urine and stools;
 c. to supply water for insensible losses (respiration and sweating);
 d. to furnish glucose which reduces the ketosis;
 e. for the sparing effect of glucuse on protein and electrolytes.
5. Blood or fresh plasma—to combat shock, supply protein and electrolytes.

A. *Fluid Management during the first twenty-four hours.* The following procedure which is outlined in Table 1 has proved very satisfactory, and when properly executed has resulted in a low mortality in hospitalized patients. It is based on the degree of acidosis as measured by the carbon dioxide combining power and the clinical picture as determined by an adequate history and physical examination.

1. *Severe acidosis* is present when the carbon dioxide combining power is below 25 volumes per cent (11 mEq/L); or the respiration is deep and pauseless; the fontanel is depressed; the skin is dehydrated with poor tissue turgor (the skin when grasped between the fingers does not resume its normal position readily) and the stools have been occurring at

TABLE 1
PARENTERAL FLUID THERAPY OF DIARRHEA DURING FIRST 24 HOURS

	M/6 Lactate cc/Kg stat I. V.	Lactate Ringer's cc/Kg stat I. V.	5% glucose in water cc/Kg/24 hr.—slow I. V. drip follows stat fluid (I. V.)	KCl Ringer's cc/Kg q 6 hrs. (subcut.)	M/6 Na. Lact. cc/Kg q 6 hrs. (subcut.)	Blood cc/Kg (I. V.)	Total Kg/24 hrs.
Mild CO_2 C. P. 40 vols % (18 mEq/L) or greater Diarrhea of short duration, slight dehydration, mild physical abnormality			60-80	10	7.5 combine		130-150
Moderate CO_2 C. P. 25-40 vols % (11-18 mE/qL), moderate dehydration. Definite physical abnormalities but approaching emergency state		30	60-80	10	7.5 combine	20	160-200
Severe CO_2 C. P. below 25 vols % (11mEq/L), marked dehydration, pauseless respiration, medical emergency	30		60-80	10	7.5 combine	20	180-200

the rate of 20 to 30 per day. The medical orders under these conditions should be as follows:

(a) 30 cc. per kilo one-sixth molar sodium lactate, intravenously, as soon as possible at the rate of 5 cc. per minute.

(b) Follow immediately with not less than 60 to 80 cc/kg/24 hrs. of 5 per cent glucose in distilled water as slow intravenous drip (20 drops per minute)

(c) One hour after starting 5 per cent glucose solution administer a hypodermoclysis of 7.5 cc/kg of one-sixth molar sodium lactate mixed with 10 cc/kg KC1-Ringer's Solution as described above and repeat every six hours until 4 clyses have been given. Hyaluronidase may be used in conjunction with the clyses.

(d) 20 cc, blood kg. between twelfth and twenty-fourth hour of treatment.

2. *Moderate acidosis is present* when the carbon dioxide combining power is between 25 and 40 vol.% (11-18 mEq/L). The clinical picture is less severe with 10 to 15 stools per twenty-four hours and the duration of the diarrhea shorter than above with the patient approaching a critical state. The following orders are indicated:

(a) 30 cc/kg. of lactate Ringer's (Hartmann's Solution) intravenously.

(b) The remainder of the therapy is as outlined under 2 and 3 for severe acidosis above.

(c) Blood usually is not indicated.

3. *Mild acidosis is present* when the carbon dioxide combining power is above 40 vol.% (18 mEq/L) and the diarrhea correspondingly less severe. The following orders are indicated:

(a) 60-80 cc/24 hours 5 per cent glucose in distilled water intravenously as above to be

started soon after admission.

(b) One hour later, 10 cc/kg. KC1-Ringer's mixed with 7.5 cc/kg. of m/6 sodium lactate is administered by hypodermocylsis and repeated at six hour intervals.

(c) Blood usually is not indicated.

B. *Fluid Therapy after twenty-four hours.* It is more difficult to be specific concerning the fluid therapy during this period because the picture varies greatly from case to case. Frequently, it is necessary to repeat the treatment given on the preceding day because of continued diarrhea and vomiting. In the majority of cases there will be sufficient clinical improvement to permit oral feeding with the result that the parenteral fluid requirements will be reduced considerably and parenteral potassium need not necessarily be administered. If possible, it is advisable to obtain a carbon dioxide combining power and regulate your fluids accordingly as outlined above. In those patients who were critically ill when treatment was started and in whom the diarrhea has diminished, and a weak formula is tolerated, 7.5 cc/kg. of sodium lactate solution and 10 cc/kg. of of KC1-Ringer's every six hours (4 clyses) is adequate. If, however, inadequate water is being taken to furnish 100 cc/kg., sufficient 5 per cent glucose in distilled water should be given as an intravenous drip to make up this deficit. On subsequent days, again no fixed rule applies to the administration of parenteral fluids. It may vary from none in children with clinical improvement to a repetition of the regime followed on any of the previous days. It is to be reemphasized that the need for potassium administration ceases when the infant begins to consume food.

In the cases of moderate acidosis on admission, the second day of fluid therapy may be handled as the first day of a mild case (refer to Table 1).

In the mild cases, frequently no parenteral therapy is required after twenty-four hours; the first day's treatment may be repeated.

Procedures such as outlined under "Office Management" above may be useful during the period of convalescence of these hospitalized patients.

II. *Combat Infection:*

Before discussing the use of antibiotic and chemotherapeutic agents in the control of infections, it is important to mention that efforts should be made to detect any infections which may be present in the blood stream, stool, or elsewhere. Therefore, blood cultures and stool cultures, etc. should be taken as soon as possible after hospitalization and before antibacterial agents are administered. Also, the stool cultures should be repeated every six hours until 3 successive cultures are obtained. It is important to emphasize that the stool cultures be planted as soon as possible in order to prevent overgrowth of the normal stool flora. Antibacterial therapy is not only indicated for the primary infection but also is needed for prophylactic purposes. These patients are highly susceptible to pneumonia, septicemia, etc.

After adequate cultures have been obtained a broad spectrum antibiotic coverage is advised. A combination of penicillin in 300,000 units, intramuscularly, daily, and streptomycin, 40 mgm/kg. daily, in divided doses intramuscularly affords adequate coverage. For typhoid fever, chloromycetin 80 to 100 mg/kg/24 hrs. is the drug of choice.

A broad spectrum antibiotic such as terramycin 6 mgm/kg every twelve hours may be given intramuscularly. Terramycin or achromycin may be given intravenously as a dilute solution in doses of 6 mg/kg every twelve hours; when administered orally these drugs may cause vomiting and diarrhea and prove disadvantageous. In

general, we advise that penicillin and streptomycin be given initially and continued until cultures and sensitivity studies indicate that other agents such as chloromycetin, erythromycin, polymyxin B., neomycin, as well as achromycin and terramycin are more effective or may be of additional value. There are times when an empirical change from one agent to another proves beneficial if the diarrhea is protracted. If kidney function is adequate, a combination of triple sulfonamides and aureomycin therapy is desirable in shigella, staphylococcus or streptococcus, proteus and paracolon infections.

The oral administration of streptomycin, neomycin (100 mg. 6 hr.) and polymyxin B (3-5 mg/kg) which are not absorbed from the gastrointestinal tract may be used for their local effects against known primary infections of the gastrointestinal tract. Recently, an epidemic of diarrhea due to Friedlander's bacillus was eradicated in our premature nursery by the oral administration of streptomycin. Antibacterial therapy should be continued until clinical improvement has occurred, and in those cases in which the stool cultures were positive, until they have become negative. This usually requires five to ten days. Parenteral or complicating infections usually are under control by the fifth day of therapy.

III. Place the gastrointestinal tract at rest.

During the past eight years there has been a change in the judgment of physicians concerning the time during which food should be withheld from the patient. It is our policy to feed nothing for twelve to twenty-four hours in those patients in whom vomiting has been a prominent feature. Water and 5 per cent glucose in water in quantities not to exceed 2 ounces every two hours is then offered the infant. If this regime results in further vomiting, oral intake is discontinued for another twelve to twenty-four hours. During this time it will be recalled that the patient is receiving parenteral fluid therapy which includes glucose and blood or fresh plasma.

IV. Resumption of feeding.

As soon as it is determined that the infant will tolerate oral feedings, which usually occurs after twenty-four hours of parenteral therapy, 2 ounces of a formula composed of equal parts of skimmed milk and water is alternated with 5 per cent dextrose every two hours. Lactic acid may be added to the formula in quantities of 5 cc. per quart of finished product. Twelve hours after the above schedule, the formula is offered every two hours for twenty-four hours and the glucose and water is given when needed between feedings. The formula on the third day is changed to a 2:1 skimmed milk formula and the quantity per feeding is increased to three ounces. From this point the formula is gradually strengthened and the quantity increased; also cereals and other foods are added gradually until the full diet is being given.

V. Blood Transfusions

Twenty cubic centimeter of blood per kilo is indicated in severe diarrhea. The infectious process as well as nutritional causes justify such a procedure. It is not uncommon to observe hemoglobin concentrations of 8 gm. per cent after hydration has been accomplished.

VI. Vitamin Therapy

It has been our policy to parenterally administer the vitamin B complex to these patients as a supportive measure. One of several preparations may be given intramuscularly, intravenously, or orally.

SUMMARY

An etiological classification of diarrhea has been given and the office and hospital

management of diarrhea in infancy has been outlined. Experience with these methods under close supervision has resulted in a mortality rate as low as 3 per cent among hospitalized patients during an epidemic involving 102 infants.

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RADIOLOGICAL CONSIDERATIONS IN THE DIFFERENTIAL DIAGNOSIS OF BENIGN AND MALIGNANT PULMONARY LESIONS *

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The increasing importance of malignant pulmonary lesions, especially of bronchogenic carcinoma, emphasizes the fact that any decrease in deaths must result from early diagnosis and early treatment. It has been shown repeatedly that the lowest mortality occurs in that group of cases in which the pulmonary lesion is discovered before the onset of symptoms. At the present time, the roentgen survey method, either the routine 14 by 17 inch or the 4 by 5 inch or 70 mm. photoroentgen film, is the best single method available for the detection of pulmonary malignancy before the onset of symptoms. It therefore becomes important that every physician employing roentgen rays as part of the physical examination of well individuals, as well as in those cases in which pulmonary pathology is suspected, remember the characteristics of early pulmonary cancer. It is interesting that in several groups of patients with known bronchogenic carcinoma, who had had chest films, with negative findings, a review of the early films made before the onset of symptoms disclosed roentgen signs of pulmonary disease which had been overlooked.

The differential diagnosis of benign and malignant, and of inflammatory and neoplastic pulmonary lesions is at times difficult and frequently impossible by all means at our disposal, except by microscopic examination of the tissues. It is generally agreed that if exact diagnosis cannot be made by other means prompt exploratory thoracotomy is indicated.

While metastatic forms of any primary malignancy may and do involve the pulmonary fields, the primary pulmonary malignancy of importance is the bronchogenic carcinoma. Primary sarcoma of the lung is extremely rare. The malignant lymphoma group involves the mediastinal lymph nodes and may infiltrate the lymphatic structures of the pulmonary fields. Many of these tumors, which were previously diagnosed by roentgen and histological methods, have since been restudied and have been reclassified as forms of bronchogenic carcinoma. Neither the primary pulmonary sarcoma nor the malignant lymphoma group has shown the phenomenal increase in incidence which has been noted in the case of the primary carcinoma of the bronchi and bronchioles.

The benign pulmonary lesions may be classified as: (1) inflammatory, specific and nonspecific, such as the pneumonias, tuberculosis, fungus infections, lipoid pneumonia, and eosinophilic granuloma; (2) congenital, such as the hamartoma, hematoma, dermoid cyst, bronchogenic cyst, and cystic disease; (3) vascular, such as the arteriovenous aneurysm; and (4) neoplastic, such as the potentially malignant adenoma.

ROENTGEN METHODS OF EXAMINATION

The roentgen methods of examination that are available for the study of pulmonary lesions are as follows:

1. The routine postero-anterior film of the chest, either the conventional 14 by 17 inch roentgenogram or the 70 mm. or 4 by 5 inch photoroentgen survey film, which has become so valuable in the dis-

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covery of pulmonary lesions in well individuals. Stereoscopic examination is possible with all three of these methods and will frequently prove valuable in obtaining information which could not be obtained by any other method.

2. Fluoroscopic examination of the chest with visualization of the esophagus should be done in all cases where a lesion has been found. This method is especially valuable in the localization of the lesion and in determining the presence of enlarged nodes pressing on the trachea or esophagus, the displacement of the mediastinum and in studying vascular pulsation and diaphragmatic movement and the presence of areas of obstructive emphysema. Frequently, preliminary fluoroscopy will indicate the necessity of additional roentgenograms in the most informative position.

3. Lateral and oblique views of the chest in various degrees of obliquity are a necessity in the localization of the lesion and in the determination of the involved anatomical area of the lung.

4. Apical or lordotic views are necessary in the study of apical lesions. The conventional apical view is a postero-anterior view with the central ray directed at an angle of 45 degrees to the feet. Films made in a similar manner by reducing the angle from 5 to 40 degrees have proved valuable in special cases. On these views all anterior structures retain their relationship to the film while the posterior structures are apparently shifted or displaced inferiorly.

The lordotic view, on the other hand, is an antero-posterior view with the patient in the vertical position. The central ray is directed superiorly to the chest. In this case the posterior structures of the chest retain their relationship to the film and the anterior structures are apparently shifted superiorly.

5. Bucky films, as a rule, show more penetration of the lesion and may visualize the primary tumor or enlarged lymph nodes through the veil-like atelectasis or infiltration of pneumonitis.

6. Bronchography has proved of great value, especially if done under fluoroscopic control with the addition of spot-filming for recording changes in the bronchial lumen. By careful technique, it is possible to visualize all portions of the bronchial system.

7. Body sectioning films have become increasingly valuable in the demonstration of tumors, enlarged lymph nodes, defects in the air filled bronchi, osteolytic lesions in the ribs or vertebrae, nodularity in cavities, and lobulations on the periphery of pulmonary lesions.

8. Pulmonary arteriography or angiopneumography has been extensively studied by a few investigators who believe that considerable information can be obtained by visualization of the vascular trunks.

9. The Cinedensigraphic technique of Marchal for the study of pulsation has not been employed generally. The method depends upon a photoelectric cell connected to amplifiers and oscillographs to register changes in motility and density of the lung parenchyma. In carcinoma the motility of the parenchyma is reduced or abolished. In benign conditions the motility is not affected.

There is no established roentgen pattern for lung tumors. The roentgen characteristics may be classified as follows: (1) atelectasis, with or without infection and with or without pleural effusion; (2) unilateral hilar mass; (3) obstructive emphysema; (4) mediastinal involvement; (5) peripheral mass or "coin" lesion; (6) lung abscess; (7) infiltration suggestive of pneumonitis; (8) superior pulmonary sulcus tumor; (9) multicentric terminal bronchiolar carcinoma.

ATELECTASIS

Atelectasis, which may or may not be associated with other roentgen signs is the most frequent finding in intrabronchial tumors. The atelectasis may be of the segmental, lobar, or massive type. A knowledge of the roentgen anatomy of the segments and lobes of the lung, fluoroscopy, and adequate films in various positions are valuable in the study of these cases.

An associated central hilar mass may be demonstrated on Bucky films or by body sectioning techniques. With a spread to the pleural surface pleural effusion may confuse the picture. Infection with or without cavitation may be present in many of these cases.

The roentgen findings in atelectasis consist of a homogenous veil-like opacity in the area of involvement. In the absence of the air normally contained by the alveolar tissues there is a corresponding decrease in volume. This results in elevation of the diaphragm, narrowing of the intercostal spaces, and where large areas are involved, a narrowing of the chest on the involved side. The mediastinal structures are displaced to the side of involvement and if the pleura of the interlobar fissure is visualized it is convex to the area of involvement. The trachea is displaced evenly and obliquely, without angulation, in atelectasis, which serves to differentiate the tracheal displacement noted in fibrosis associated with inflammatory diseases, such as tuberculosis. In rare cases the mediastinum may be displaced to the normal side due to a large bulky or space occupying tumor.

UNILATERAL HILAR MASS

Unilateral hilar enlargement represents the earliest sign and the one which is most frequently overlooked in carcinoma of the lung. This is the result of a tumor located in one of the larger bronchi. It may spread to the regional lymph nodes or through the wall to produce peribronchial infiltration. This may be noted in many cases for months before the onset of symptoms. There is considerable variation in the size and shape of the hilar shadows in normal individuals and in borderline cases it is difficult to determine whether we are looking at a variation of the normal or at an enlarged hilum. Rigler, O'Loughlin, and Tucker have suggested a method of measuring the hilar structures which should aid in determining whether the hilum is enlarged. With enlargement, old inflammatory processes cannot be absolutely eliminated but it has been shown that bronchogenic carcinoma is a frequent cause of an enlarged hilum.

The technique of measurement of the hilar structures consists of drawing a vertical midthoracic line bisecting the horizontal transthoracic diameter at the aortic arch and at the diaphragms. The distance between the lateral margin of the visualized hilus and vertical midthoracic line along a line perpendicular to the midthoracic line represents the transverse diameter of the hilum. The right and left diameters are not usually continuous.

In the normal individual the hilus measures from 3.5 to 7.0 cm. With involvement of the hilus by carcinoma the measurement ranges from 5.7 to 11.5 cm. The sum of the measurements across both hilar areas in the normal chest averages 11.0 cm. and the difference in the measurements of the right and left sides, 1.0 cm. or less. The sum of the measurements of both hilar areas in the abnormal chest averages 13.0 cm. Therefore, if the sum of the measurements across the hilar structures is 13.0 cm. or over, or if one hilum measures over 7.0 cm. the possibility of the chest being normal is less than 10 per cent. If the sum of the measurements is under 11.0 cm. there is little chance that carcinoma will be present in the hilum.

OBSTRUCTIVE EMPHYSEMA

Obstructive emphysema occurs as an early roentgen sign of bronchial carcinoma. With obstruction of a bronchus air enters the obstructed segment or lobe on inspiration. On expiration the involved segment or lobe remains distended as air leaves the remainder of the lung. With involvement of a lobe or lung the mediastinum may be displaced to the normal side on expiration. On the film at the end of expiration the diaphragm on the affected side will be depressed relative to the diaphragm on the normal side. Obstructive emphysema may be easily overlooked unless remembered and looked for on films made at the ends of inspiration and expiration. Occasionally, a tumor may cause atelectasis of one lobe or segment of a lobe and obstructive emphysema of the adjacent area.

MEDIASTINAL INVOLVEMENT

While mediastinal involvement is frequently present in relatively late cases of bronchogenic carcinoma associated with atelectasis, infection and hilar enlargement, it may be present infrequently in the early stages of bronchial cancer as the only evidence of abnormality. A wide, lobulated mediastinal shadow may be noted which results from spread of the tumor to the mediastinal lymph nodes. The differential diagnosis must consider the lymphoma group and in some cases aortic aneurysm.

PERIPHERAL MASS OR "COIN" LESION

As a group the peripheral or solitary mass or "coin" lesions may include many histological types. In the average series of cases the most frequent lesion is the granuloma, which also has been designated as a tuberculoma. The hamartoma, fibroma, and chondroma represent the benign members of the group. The bronchial adenoma and pleural mesothelioma are considered potentially malignant tumors and for that reason are treated as such.

In from 35 to 45 per cent of cases the peripheral solitary mass is malignant—primary or metastatic. Terminal bronchiolar or "alveolar cell" carcinoma is found in many of the peripheral or solitary masses of the malignant type. In many cases the metastatic tumors are multiple and this fact in addition to the history of a primary tumor elsewhere will establish the diagnosis. Metastatic single tumors do occur, without a known primary location, and the differential diagnosis may be impossible except by exploratory thoracotomy. With known tuberculosis a solitary mass in the area of involvement may represent a malignant tumor and not a tuberculoma.

Lateral and oblique views in addition to the postero-anterior view are necessary to establish the location of the mass. What may appear to be a hilar or central mass may prove to be peripherally situated on the other films.

It is in this group particularly that exploratory thoracotomy is indicated in all cases in which the mass is not known or proved to be benign. As a rule, metastases occur relatively later than in the central hilar type, and the tumor may remain the same size for months. With metastasis, the hilar structures will become enlarged and may appear considerably larger than the primary focus. With infection, the solitary focus may simulate pneumonia or pulmonary abscess. At survey examinations no symptoms were present in approximately 52 per cent of the solitary peripheral malignant tumors discovered, which were not complicated by infection or metastasis.

In the differential diagnosis of the "coin" lesions the various characteristics of the shadows have been studied. As a general rule, the malignant tumor is larger, more irregular and less clearly defined than the benign tumor, but these points are of practically no value in the differential diagnosis. Complicating factors, such as hemorrhage, may produce a well defined regular shadow in a highly malignant tumor. The density or homogeneity and the location of the tumor are of no significance in the differential diagnosis.

The two characteristics which may prove to be of importance, with limitations, are the presence of calcium in the lesion and the evidence of growth. Central or laminated calcification is fairly good roentgen evidence that the tumor is benign. In some cases the calcification may be difficult to demonstrate and Bucky or body section films may be necessary to visualize it. Peripheral calcification has been demonstrated in the slow growing bronchiolar or "alveolar cell" tumors.

Evidence of growth is definitely indicative of the malignant nature of the tumor. It is questionable whether the delay necessary to demonstrate this finding is too costly from the standpoint of the loss of operability. Serial films are especially valuable in the differential diagnosis of acute penumonias and central hilar malignancy but there is no indication in the peripheral lesion for such costly delay.

PULMONARY ABSCESS

The presence of a pulmonary abscess in a man of over forty years of age should be considered the result of malignant changes until disproved. Cavitation and bronchiectasis result from bronchostenosis and infection. In some cases the irregular, nodular, or lobulated wall of the cavity due to the projections of malignant tissue can be demonstrated by Bucky or body section films.

INFILTRATION SUGGESTIVE OF PNEUMONIA

An infiltration suggestive of pneumonia may be seen in the central or hilar type of bronchogenic tumor with minimal hilar enlargement and nodularity and with peribronchial, perivascular, or perilymphatic infiltration. It may be noted, also, peripherally, simulating the "atypical" or "virus" types of pneumonia. The differential diagnosis in the case of the acute pneumonias is relatively easy by the clinical findings and in the clearing or disappearance of the abnormal shadows within periods ranging from several days to several weeks. In the case of the chronic types of infections, such as lipoid pneumonia, atypical tuberculosis, or fungus infections, the differential diagnosis may be extremely difficult.

SUPERIOR PULMONARY SULCUS TUMOR

In 1924, Pancoast presented three cases believed to represent an entity among intrathoracic tumors. Since that time many cases have been reported. Although it was suggested that an embryonal rest was the etiological factor it is generally recognized that in the majority of cases a bronchiolar cancer of various histological types is identified. Metastases from primary cancers or sarcomata elsewhere have also been reported. Pain in the shoulder and atrophy of the muscles of the upper extremity are usually present. Horner's syndrome, associated with local destruction of ribs or vertebrae, is noted in most cases.

MULTICENTRIC TERMINAL BRONCHIOLAR CARCINOMA

Multicentric terminal bronchiolar carcinoma has also been considered as "alveolar cell" carcinoma and it is practically impossible to differentiate it from pulmonary adenomatosis by radiological methods. Pneumoconiosis, miliary tuberculosis, and miliary metastases must be differentiated from this entity. Of slight value is the fact that in multicentric terminal bronchiolar carcinoma fibrosis is absent and the nodules appear to coalesce to form infiltrative masses.

SUMMARY

Radiological examination of the chest is the simplest and most effective method of detecting early malignant pulmonary lesions. The rate of resectability and cure is very much higher in those cases in which roentgen evidence of a pulmonary lesion is discovered before the onset of symptoms.

The differential diagnosis of malignant and benign pulmonary lesions is difficult and often impossible. Exploratory thoracotomy and biopsy are indicated in every operable case in which a definite diagnosis of a benign lesion cannot be made by all the available nonsurgical diagnostic procedures. Where there is a doubt or question, the roentgen diagnosis of malignant pulmonary lesion is accurate in a larger percentage of cases than is the roentgen diagnosis of a benign pulmonary lesion.

Central or laminated calcification is the only roentgen finding of significance in the differential diagnosis of "coin" lesions. Evidence of clearing or disappearance of the abnormal shadow in serial films is of value in the differential diagnosis of the acute pneumonias. Evidence of growth or spread of the lesion in serial films will indicate the presence of a malignant process but the slow growth of some of the malignant tumors will void the value of this sign by a reduction in the rate of resectability.

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DIFFERENTIAL DIAGNOSIS OF URETERAL CALCULI *

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No attempt will be made to review the various theories of the etiology of urinary tract calculi. There is, however, a very intensive study being done in various sections of the country pertaining to the factors of stone formation.

It is generally agreed that most ureteral calculi originate in the calyces or pelvis of the kidney and the symptoms result from their transit through the ureter or their impactions somewhere enroute.

Herman states that rare primary stone develops in a sacculation or dilated segment of the ureter proximal to a stricture. They are usually alkaline in composition suggesting that stasis with bacterial decomposition has been a major factor.

DIAGNOSIS

Ureteral calculi may be classified into three groups according to their clinical manifestations:

Group I. Those with typical colic.

Group II. Presenting basically lower urinary tract symptoms.

Group III. Atypical cases in which the symptoms are referred to other organs.

A carefully taken history is one of the most valuable aids in the diagnosis of ureteral stone.

A detailed account of the onset of the attacks is of extreme value, as is also the relationship of nausea and vomiting to the initial pain. A history of prior attack of colic or passage of stone, the location and radiation of pain, presence of gross hematuria, etc., are all important. Typical ureteral colic begins suddenly and usually without premonitary symptoms. A story of being awakened by the severe pain is so common that in my experience I believe the attacks occur more often at rest, but they also may occur during heavy lifting or exercise. Usually, without warning the attack begins with a sudden stab in the back followed by waves of increasing pain of a very severe nature. Rigidity of the abdominal muscles, acceleration of the pulse, and a cold, clammy skin are usually present. Nausea and vomiting are practically always present. The pain later is referred to the course of the ureter or along the lumbar plexus into the testis, thigh, and glans penis in men, and in women into the vulva. These patients are usually unable to sit or lie down, but will be found pacing the floor. Careful questioning with regard to recent ingestion of a sulfa preparation is valuable. The sever-

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ity of the pain is dependent on the suddenness of the change in pressure in the ureter.

Ureteral stones in the second clinical group present mainly lower urinary tract symptoms, including frequency, urgency, dysuria, pain referred to the rectum, urethra, perineum, or vagina. These symptoms may or may not be associated with ureteral colic and renal pain.

In the atypical groups of cases pain may simulate gall bladder disease, appendicitis, disease of the pelvis in the female, the colon, etc.

Calculi in a fixed position in the ureter, causing practically no obstruction may remain indefinitely without causing ureteral or renal pain, and frequently, small stones pass unnoticed by the patient. Ureteral stone obstruction may be ushered in by the symptoms of acute severe pyelonephritis with continuous or remittent fever, rapid pulse, luekocytosis and tenderness over the kidney. Sometimes it is preceded by acute pain but often there are no localizing signs to indicate ureteral obstruction. Anuria is occasionally the first indication of ureteral stone obstruction and its onset may or may not be preceded by pain.

PHYSICAL FINDINGS

Findings vary greatly from severe loin tenderness on palpation or percussion, usually found in acute obstruction, to the complete absence of findings. Nevertheless, a careful physical examination should be done as other lesions possibly causing the symptoms may be detected. An attempt to palpate stone by rectum or vagina should be done but only large stones can be detected in this manner. In my experience this procedure has only been of value in women.

Hematuria either gross or microscopic is the most valuable laboratory finding. The blood cells may be few or many, and often repeated microscopic examination within a few hours will vary. In other words, none may be found on careful examination, but a few hours later significant quantities detected. A normal urine has been reported in as high as 20 per cent of cases by some authorities, but most believe the percentage is much less. I think the number of cases is surprising in which gross hematuria without pain is present in ureteral stone. Carefully searched for, a trace of albumin is found in a high percentage of cases.

A moderately elevated white blood count is frequently found in uncomplicated ureteral stones as well as 99° to 99.5° temperature. Unfortunately, these two procedures are of little diagnostic assistance in uncomplicated cases.

X-RAYS

When a ureteral stone is suspected the plain film of the abdomen, the so-called KUB. or "flat plate" is of prime importance.

Fortunately, most ureteral stones are sufficiently dense to cast a shadow on the plain film. In a small percentage, estimated from 3 to 5 per cent, the stones may be nonopaque. These are usually the uric acid, cystine, or xanthine stones. In studying the KUB, we should always keep in mind the most common extraurinary shadows which may be confusing such as:

1. A dense tip of the transverse process of the lumbar vertebra.
2. Calcification of the iliac vessels just below the sacroiliac joint.
3. Phleboliths.
4. Mesenteric lymph nodes.

Stones of small size or poor density may be obscured by bony structure, especially the sacrum, and by gas in the intestines. Excretory urogram is the most reliable method of identifying a stone. There is no doubt that the frequency and accuracy of ureteral stone diagnosis has increased with the rapid increase in the use of intravenous urogram. Since the method is so valuable some time should be devoted to discussing the interpretation of this method and some of the pitfalls.

There are two main types of urogram seen with stone:

1. The so called ideal case—when only moderate obstruction exists and good function is present; the ureter is well visualized down to and including the stone shadow. The diagnosis in these cases is simple and definite.

2. Acute severe obstruction with a temporary failure to excrete the dye. In most cases this, together with the history of pain on the side corresponding to the functionless kidney and the presence of a shadow in line with the ureter, is sufficient to make the diagnosis. If no shadow is found in the plain film and diagnosis is urgent, ureteral catheterization is necessary.

Demonstrating that the shadow and the outline of the ureter coincide in the anterior posterior view does not necessarily clinch the diagnosis.

Oblique and lateral views to prove that they are in the same plane will prevent many errors. These should be made at the time of maximal ureteral filling. Dilatation just above or below the stone shadow, or a localized area of dilatation of the ureter in the area where the stone is located, aid in the interpretation of the urogram. Stones in the intramural ureter, due to spasm, frequently show the dye absent just above and below the stone. Nonopaque ureteral calculi are usually very difficult to recognize. The classical finding is a negative shadow or filling defect in the ureter in the urogram. In cases of acute obstruction with no kidney function on the involved side the passage of a ureteral catheter may reveal obstruction at a definite level with stasis above or a "grating" sensation may be felt on passage of the catheter. If a retrograde ureterogram is resorted to, a filling defect may be shown. In a recent case a constant filling defect with dilatation above required exploration to prove the defect to be due to a nonopaque stone and not a ureteral tumor. In reduplication of the ureter a stone shadow in an obstructed ureter may be erroneously considered outside the urinary tract if the other ureter is outlined in the urogram and this possibility must always be considered.

Some maintain that ureteral catheterization and retrograde pyelography are never necessary or justifiable in the diagnosis of stone, but occasionally, especially with nonopaque calculi or where renal function and dye concentration is poor, such procedures must be utilized to accurately diagnose and localize stones. The use of a wax tipped ureteral catheter is not often employed at the present time, probably because of newer and better diagnostic aids, but may be of considerable value if carefully used.

The calculi most frequently overlooked according to Peterson and Holmes are those located in a small area medial to the spine of the ischium and just above a line joining the lowest part of the ischial spines. Too, a stone may be obscured by the bony pelvic structure or because it is too small.

DIFFERENTIAL DIAGNOSIS

In considering differential diagnosis no attempt will be made to differentiate the common pathologic states within the urinary tract which may be confusing, such as ureteral stricture, tumors of the ureter, blood clots, ureteritis cystica. Instead the more common entities outside the urinary tract will be considered.

Appendicitis: By far the most important and frequent source of concern is the correct differentiation of acute appendicitis from ureteral stone. In appendicitis the history of gradual onset with colicky epigastric pain and later localization over McBurney's point is important. In contrast, the pain in stone is sudden in onset and usually radiates. Rigidity and rebound tenderness are usually present but may also be noted in stone. The urine is usually normal in appendicitis, but microscopic hematuria may be present if the appendix is adherent to the ureter.

In rare cases the presence of radiopaque concretions in the appendix may make the diagnosis even more difficult. The temperature and leukocyte count are usually moderately elevated with a high polymorphonuclear count. The excretory urogram is of vital importance and will usually present one of the patterns previously described.

Intestinal obstruction: In many cases of acute, severe ureteral obstruction the nausea, vomiting, and adynamic ileus may easily be confused with intestinal obstruction. The pain may be colicky, intermit-

tent, and not well enough localized to indicate ureteral involvement. The abdomen may show marked distention; absence of peristalsis and the x-ray show the bowel distended with gas. A history of previous operations may be obtained in intestinal obstruction and physical examination may detect a cause for the obstruction, such as an incarcerated hernia or a mass due to intussusception. Visible peristalsis may be seen. The urine and blood count are usually normal early in intestinal obstruction.

Gall stone colic may be confused with ureteral pain as the onset in both is sudden, the pain severe and colicky. Radiation to the right shoulder area is common and there may be localized tenderness over the gall bladder. A history of prior similar attacks of dyspepsia and nausea together with moderate temperature 100° to 101° F. with normal urinary findings is usually present. X-ray studies may reveal shadows of proper density in the gall bladder region. The age incidence is the same, but females predominate.

Not often is it necessary to differentiate *ruptured peptic ulcer* from ureteral stone as the boardlike rigidity noted with ulcers is not a finding in ureteral obstruction. The sudden onset of severe pain, predominantly in males of 30 to 50 years of age, with normal temperature and leukocyte count, are found in both. If typical rigidity is not present excretory urogram should be utilized promptly as the type of stone case likely to be confused with this picture frequently does not present localization symptoms early.

Tabes dorsalis is another condition in which pain is sudden in onset, sharp and agonizing in the epigastrium, and with girdle radiation to the back. Sweating, cold extremities, and a weak pulse are usually present. A careful physical examination will detect absent knee jerks; Argyll-Robertson and a positive Romberg. The temperature and blood count are normal.

A twisted *ovarian cyst* pedicle or *ruptured ectopic pregnancy* may give pain of sudden onset, sharp and stabbing in one iliac region radiating to the back. In the former a history of pelvic tumor is obtained and on examinataion tenderness and a pelvic mass will be found corresponding to the site of the pain; in the latter a history of amenorrhea, associated at times with signs of pregnancy. The pain is sudden and intense in one or the other ovarian region and accompanied by faintness and collapse. Bimanual examination will reveal a boggy mass in the culdesac. The temperature is subnormal and the leukocyte count elevated and anemia is usual.

Acute pyelitis is gradual in onset rather than sudden, the pain usually dull aching in character present over the kidney with some radiation along the ureters to the bladder. There is tenderness over the kidney but no rigidity. Frequency, dysuria and pyuria are the rule. The temperature is elevated and may be up to 104 to 105° F. and the leukocytes are elevated sometimes as high as 25,000.

A condition not likely to be given consideration in the diagnosis of ureteral stone is *dissecting abdominal aortic aneurysm.* We have encountered three such cases during the past several years in which ureteral stone syndrome was simu- and intermittent and radiates to the back. Bladder symptoms may be associated in lated and urologic study was necessary to eliminate ureteral obstruction. The pain is severe, persistent, rather than colicky, some cases but usually none are present. Diagnosis of this condition is not easy, but perhaps because it is not given consideration. Absence or weakness of the femoral pulse on the side involved usually can be detected and if the presence of an expansile pulsating tumor can be observed the diagnosis is almost certain. The urine is negative and x-ray may show an erosion of the vertebral bodies with intact discs.

Sulfonomide obstruction due to crystallization may give the typical picture of ureteral stone. A history of sulfa therapy together with the finding of sulfa crystals in the urine creates suspicion and warrants immediate study with excretory urogram, and if obstruction exists ureteral catheterization.

Other conditions to consider on occasion are: (1) ruptured graafian follicle, (2) acute salpingitis, (3) mesenteric thrombosis, (4) pancreatic calculi with colic, (5) herpes zoster.

Conditions giving symptoms of *cysto-urethritis:* The differentiation of stone in the distal ureter and chronic prostatitis is very frequently necessary. A patient may complain of aching in one testis, frequency of urination, dysuria, and perhaps discomfort on ejaculation. The urine is frequently normal or contains a few red blood cells due to the posterior urethritis. The testis on the involved side may be tender on examination. The presence of pus in the prostatic fluid proves the presence of prostatitis, but does not rule out stone as both may be present. The pain of prostatitis is usually relieved by treatment. If symptoms do not improve x-ray studies, including an excretory urogram with oblique or lateral views, will reveal that a stone in the ureter is responsible for the symptoms and not the prostatitis.

Occasionally an acute *epididymitis*, before the swelling is pronounced, may resemble stone. There may be urinary symptoms of frequency, urgency, and dysuria, together with colicky pain in either lower quadrant and tenderness to palpation. The pain and tenderness is rarely ever above the internal inguinal ring. The urine will reveal pyuria in nearly all cases. A history of urethral discharge is valuable. The epididymis is tender and a variable degree of fever and leukocytosis is almost constant.

In women a low lying stone may be confused with granular urethritis. The urinary symptoms may be similar with no pyuria and only an occasional red blood cell or none. Cysto-urethroscopy may also show typical granular changes. In these cases vaginal examination may be helpful in localizing tenderness in the area of the stone if not actually being able to detect it on palpation. A history of colic in the past may be helpful. If rapid improvement is not obtained by treatment ureteral stone must be eliminated.

The presence of frequency and dysuria at times along with cramplike pain in one or the other iliac fossa due to chronic salpingo-oorphoritis may require differentiation from stone in the lower ureter. The presence of leukorrhea, menorrhagia, backache and a painful mass behind or beside the uterus will usually be found in pelvic infection.

Painful intercourse is a common complaint with stones in the lower ureter and proper studies should be done to rule out calculi in cases where the cause is undetermined.

SUMMARY

In the diagnosis of ureteral calculi x-ray studies are essential, including the excretory urogram. A careful history, physical examination, and urinalysis will localize most stones, but occasionally ureteral catheterization and retrograde studies are necessary.

Many of the syndromes giving acute abdominal pain need to be considered in a differential diagnosis of acute ureteral obstruction due to calculi. Finally, stones in the lower ureter frequently present symptoms of cystourethritis only, which may be a source of confusion.

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DISCUSSION

Dr. John G. Menville (New Orleans): The differential diagnosis of ureteral calculus implies equivocal signs, symptoms, and findings and an uncertainty of the diagnosis. Such indecision seldom arises if a complete urological examination is made. It is usually in the absence of clear urograms that a surgeon remains in doubt.

The problem of differential diagnosis is best solved by proving a calculus to be present or definitely absent. The judicious use of opaque catheters, dye, and urograms in the A-P and oblique views is of inestimable value in terminating all doubt.

Ureteral colics are seldom mistaken for biliary calculi but such conditions as appendicitis, blood clots from hemorrhage of the kidney or ureter,

intestinal obstruction, transient recurrent obstructions of certain hydronephrosis, herpes zoster, intervertebral discs, cord lesions and pelvic pathology in the female may simulate pain produced by a ureteral calculus.

The differential diagnosis between a ureteral calculus and an acute abdominal disaster may be difficult. The presence of distention may neutralize the usual advantage of radiograms. The presence of blood in the urine, tenderness in the lumbar area, and partial rigidity of the abdominal muscles are suggestive of ureteral colic. On the other hand, a rapidly rising pulse and one over 100 is suggestive of an intraperitoneal lesion. In all such doubtful cases an exploratory laporatomy is indicated.

Nonopaque stones, estimated to be present in 5 per cent, pose an additional problem. Negative shadows in opaque dye help in their detection. It must be remembered that a ureteral calculus may be secondary to such underlying pathology as stricture, infection, valve, and tumor.

Silent calculi may be overlooked because of the absence of pain. Such cases usually show blood in the urine and are frequently accompanied by digestive disturbances.

Whenever a diagnosis of ureteral calculus is missed it is usually the result of an incomplete examination.

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DIAGNOSIS AND TREATMENT OF THE PAINFUL SHOULDER *

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Pain in the shoulder is a common complaint for which there are many causes. Injuries, major or minor, and diseases that result from degenerative changes in the musculotendinous cuff and the long head of the biceps are responsible for most cases of pain that have their origin in the shoulder.

In order to understand the structural changes and disturbed function that result from such conditions, it is necessary to understand the anatomy of the shoulder and shoulder joint.

ANATOMY OF THE SHOULDER

The scapulohumeral joint is often referred to as the shoulder. DePalma [1] has pointed out that the shoulder is actually composed of four articulations: (1) the sternoclavicular, (2) acromioclavicular, (3) scapulohumeral, and (4) scapulothoracic.

The scapulothoracic connection is not a true joint but, because it acts as one, it should be considered as such functionally.

The scapulohumeral joint consists of the articulation between the glenoid process of the scapula and the humeral head [1-4]. The head of the humerus is much larger than the glenoid cavity and only a small portion of the head is in contact with the glenoid fossa at any one time during motion or at rest. The capsule of the glenohumeral joint arises from the bony rim of the glenoid process and inserts distally into the upper portion of the anatomic neck of the humerus. The capsule of the glenohumeral joint is exceedingly lax. This is especially true of the inferior portion and, when the arm is adducted to the side, it forms a loose redundant fold. Because of the laxness of the capsule, a wide range of movement is possible. The capsule is strengthened on all sides except on the inferior portion by the flat tendons of the supraspinatus, infraspinatus, teres minor and the subscapularis muscles. All of these muscles end in broad, flat tendons and the component fibers seem to flow together with those of the joint capsule. So complete is the fusion in this area that they appear to be one structure [1]. These tendons make up the musculotendinous cuff of the scapulohumeral joint, and the deltoid and teres major muscles cover the rotator cuff and glide over it. This is made possible by the interposition of several bursae.

TEARS OF THE MUSCULOTENDINOUS CUFF

Function of the Musculotendinous Cuff. The muscles of the musculotendinous cuff have several functions. They rotate the humerus externally and internally; they fix the humeral head in its various positions on the glenoid fossa. They act as a suspensory ligament, and they maintain the power of the abducted arm. The supraspinatus initiates the first 20 to 30 degrees of abduction.

Etiology of Tears. Age, trauma of use,

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and occupation, as well as direct injury, may cause tears in the musculotendinous cuff [1]. It has been noted that degenerative changes are grossly demonstrable after the fourth decade and increase with *age* [1, 5, 6]. Tears of the musculotendinous cuff are infrequent before the fourth decade of life. After this they are much more common and are sometimes caused by minor trauma. We have seen spontaneous rupture in one patient who was seventy years of age.

The supraspinatous tendon forms the top of the cuff and is under more strain than are the other tendons. The constant movement of the tendon as it arches over the head of the humerus and under the coracoid process subjects it to constant friction as the arm is abducted and adducted and predisposes to tears as a result of the *trauma of use.*

Tears are more frequent in individuals whose *occupations* require hard labor. Men are affected ten times as frequently as women.

A history of *injury* can be elicited in most cases, the most frequent being a fall on the outstretched arm, the sudden elevation of the arm, or the lifting of some heavy object.

Pathology of Tears. Tears of the musculotendinous cuff can be divided into two major types—incomplete and complete [1, 5, 7].

There are three types of *incomplete tears* [1, 5, 7]—tears on the inferior surface, tears in the substance of the cuff, and tears on the superior surface. Tears in the substance of the tendon rarely produce symptoms early. Later in the healing process, calcium salts may be deposited at the site of injury and produce a calcareous tendinitis, which may involve the bursa which overlies the supraspinatous tendon. Tears on the inferior surface may irritate the joint capsule and produce symptoms, while tears on the superior surface, because of the rough, mobile tab of tissue that forms, irritate the bursa which overlies the supraspinatous tendon and may give rise to a bursitis without calcification.

Complete ruptures extend through the entire thickness of the cuff and involve the joint capsule. In some cases the greater part of the cuff is completely detached from both tuberosities. These extensive lesions are called massive avulsions and are associated with dislocations of the scapulohumeral joint and fractures of the anatomic neck of the humerus. Most complete tears occur in the region of the supraspinatous tendon because it is subjected to the greatest amount of strain. As a result of trauma inflicted on a degenerated tendon, a transverse tear occurs. Repeated trauma and the pull of the subscapularis and teres minor muscles in opposite directions cause the tear to spread, forming a crescentic or triangular defect [3, 6-11].

Clinical Picture of a Tear. Pain in the shoulder following an injury is a constant and characteristic feature of tears of the musculotendinous cuff. The pain is usually localized over the greater tuberosity of the humerus and is aggravated by motion, especially abduction. It may radiate up into the neck or down the arm. After several days the acuteness of the pain subsides, the duration depending upon the extent and nature of the tear. The degree to which normal function is impaired also depends upon the extent of the tear, whether it is incomplete or complete. In the acute stages, pain and muscle spasm may be so pronounced that the severity of the lesion cannot be ascertained by physical examination. After a few days of rest, the pain may lessen and the extent of the damage may then be accurately evaluated.

Physical Examination. Physical examination in the acute stage reveals marked tenderness over the greater tuberosity of the humerus and the deltoid muscle. Abduction of the arm causes pain, and the ability to maintain the arm in this position is decidely reduced. If the rupture is complete, abduction cannot be maintained at all. Active contractions of the deltoid should always be elicited in order to rule out paralysis of the axillary nerve. Later there may be atrophy of the shoulder muscles, usually becoming noticeable three to four weeks after the injury. The degree of atrophy will be dependent upon the

severity and duration of the lesion.

Partial ruptures can never be diagnosed with certainty by clinical examination. They may be suspected when a typical history has been obtained. Infiltration of 10 cc. of one percent procaine relieves muscle spasm and temporarily gives complete restoration of power and range of motion.

X-ray studies should always be made to rule out bone injury or a calcareous tendinitis.

Treatment. When a diagnosis of a partial or complete rupture of the cuff has been made, the affected extremity should be placed in a sling until the acute stage has passed. This usually requires forty-eight to seventy-two hours. Then physiotherapy, consisting of heat and active movements, is instituted. Recovery usually occurs after five to six weeks.

It is rarely necessary to operate on complete tears and good results may be obtained if the shoulder is protected from further trauma and treated conservatively much as in the case of an incomplete tear. When massive avulsions have occurred it may be necessary to reattach the torn cuff to the greater tuberosity of the humerus by open operation [1, 3, 5-7].

CALCAREOUS TENDINITIS

The term, *calcareous tendinitis,* more adequately describes the basic pathologic process responsible for this syndrome [1, 4-6, 10-13] than do the frequently used terms, *subdeltoid bursitis* and *subacromial bursitis.* It has been found that either as a result of trauma or because of degenerative changes in the supraspinatous tendon, there is a deposition of calcium in the tendon as it heals. The bursa overlies the tendon and, in the motion of abduction, it is compressed between the head of the humerus and the acromial process. The constant irritation caused by the calcified mass beneath the bursa causes it to become inflamed, swollen, and painful. The inflammatory process may, and usually does, spread to the other components of the shoulder cuff, which results in further pain and limitation of scapulohumeral motion. If the deposit is large, it may erode the floor of the bursa and rupture into it, resulting in an accumulation of a milky fluid. It is apparent, therefore, that the primary disturbance begins in the tendon and the bursa becomes only secondarily involved. Calcareous tendinitis occurs more frequently in the fourth and fifth decades when degenerative changes begin to take place. Males are affected more than females and the right shoulder is involved in right-handed individuals, the left in the left-handed individual. It may be bilateral. The condition is common in salesmen, who carry valises, and in housewives who do their own washing. The patient often gives a history of trauma several years previously.

Clinical Features. In the acute stage, pain, muscle spasm, and restriction of motion are the cardinal features of calcareous tendinitis. The patient gives a history of the sudden onset of pain in the shoulder, aggravated by abduction and external rotation. The pain may radiate up the neck or down the arm to the forearm. On physical examination, pressure over the greater tuberosity of the humerus causes exquisite pain. X-rays show a calcified mass just above the greater tuberosity of the humerus. It is quite possible to have bursitis without calcification but due rather to a superficial tear of the supraspinatous tendon.

The pain is never quite as severe in the chronic stage, and only certain motions at the shoulder cause discomfort. The patient may be unable to sleep because certain positions compress the bursa and cause pain.

Treatment. The condition may be treated by radiotherapy, by aspiration and needling, or by surgical excision. In the acute stage, we prefer aspiration and needling, with the injection of 25 mg. (1 cc.) hydrocortone. The technic is simple. The skin over the shoulder is prepared and 1 per cent novocaine is injected to create a wheal over the most tender area of the shoulder. The novocaine filters down to the bursa and to the greater tuberosity of the humerus. Then the bursa is aspirated for milky fluid, although

usually none is obtained. If milky fluid is aspirated, a #19 needle is inserted directly opposite to—and about 1 cm. away from—the first needle. The bursa is irrigated with normal saline until the solution returns clear. If no milky fluid is aspirated, numerous punctures are made in the bursa and about 25 cc. of 1 per cent novocaine is injected into and about the bursa. Finally, 1 cc. (25 mg.) hydrocortone is injected.

Immediately after this procedure the patient usually has complete relief from pain and a full range of motion at the shoulder. However, several hours later, the pain recurs and the patient almost always requires opiates. In the ensuing few days there is a gradual regression of symptoms and on the fifth day there is almost complete relief. Follow-up by serial x-rays will show that the calcified deposit becomes less dense and is completely absorbed between the sixth and eighth weeks. We prefer this treatment because it gives a higher percentage of cures, is readily available and can be used as an office procedure.

X-ray therapy in the acute stage is a very effective form of treatment [14]. It usually requires three to four exposures and has the advantage of being painless.

In the chronic stage neither aspiration and needling nor x-ray therapy is effective. We usually instruct the patient to wait for an acute flare-up and then we treat the acute condition.

Only when the symptoms are extremely severe do we advise surgical excision.

FROZEN SHOULDER

The frozen shoulder is a definite clinical entity [1, 8, 9]. It is usually secondary to some form of injury to the shoulder, a calcareous tendinitis of the supraspinatous tendon, or a bicipital tendosynovitis. Pain in the shoulder causes muscular inactivity followed by a low-grade chronic inflammatory process which, in turn, causes a slowing down of the circulation and venous stasis. All of the soft tissues adjacent to and comprising the musculotendinous cuff are affected. This is responsible for the formation of capsular, synovial, intermuscular and intramuscular adhesions [1, 8].

Clinical Features. Frozen shoulder occurs in individuals over forty years of age, the greatest number being between fifty and sixty. More women than men are affected. The condition may develop after some injury to the shoulder, most cases being, in our experience, secondary to calcareous tendinitis.

Pain and marked limitation of motion, particularly evident on abduction, are the most significant features of the syndrome. On physical examination there is pain over the shoulder joint, being most severe over the greater tuberosity and long head of the biceps. Clinically, there exists a fibrous ankylosis of the scapulohumeral joint.

Treatment. If possible, the cause should be determined, and removed. When the etiologic factor cannot be determined, rest, hot compresses applied to the shoulder, and opiates are given to relieve the pain. After the acute stage, which lasts ten to fourteen days, the extremity is carried in a sling. Pendulum exercises are prescribed and, as the condition improves, more active exercises are instituted.

The clinical course is variable. Frozen shoulder may last a very short time or it may remain static for months, or even years, before regression takes place. Most patients, however, will recover within three to six months, although some may take up to one to two years. The shoulder should never be forcibly manipulated as irreparable damage may be done to the shoulder cuff [2].

BICIPITAL TENDOSYNOVITIS

Bicipital tendosynovitis, causing pain and stiffness in the region of the shoulder joint [1, 8, 9, 15], may be secondary to injuries about the shoulder or it may have no relation to trauma.

This condition is more common in men than in women and occurs more often on the right in right-handed individuals, again suggesting that trauma of use may be responsible for the majority of such cases. Trauma of overuse causes fraying and shredding of the tendon [9, 16]. This roughening of the tendon causes irritation

to the tendon sheath which results in a low-grade inflammatory process producing thickening and the formation of adhesions to the tendon.

Clinical Features. The patient complains of pain in the anterior aspect of the shoulder, often radiating to the lower arm and forearm. Usually there is a certain range of active painless motion. Motions which put the biceps tendon on stretch, such as abduction and the lifting of heavy objects, cause pain in the region of the long head of the biceps tendon. Pressure over the bicipital groove always elicits great tenderness. The x-ray is of little help in diagnosis except in ruling out a calcareous tendinitis.

Treatment. In either the acute or the chronic stage the tendon sheath may be infiltrated with 15 cc. 1 per cent procaine and 1 cc. hydrocortone. This is usually followed by complete relief of pain and, in most cases, by restoration of normal motion within five to ten days.

SUMMARY

Injuries—major or minor—and diseases which result from degenerative changes in the musculotendinous cuff and the long head of the biceps are responsible for most cases of pain originating in the shoulder.

These diseases are (1) injuries to the musculotendinous cuff, (2) calcareous tendinitis of the supraspinatous tendon, (3) frozen shoulder, and (4) tendosynovitis of the long head of the biceps.

A thorough knowledge of the anatomy of the shoulder is necessary to an understanding of the structural changes and disturbed function which results when these diseases occur.

The pathologic physiology of each condition is described and treatment for each outlined.

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THE VALUE OF PROCTOSIGMOIDOSCOPIC EXAMINATION

It has been said that a proper proctosigmoidoscopic examination is, in comparison with other examinations, a neglected diagnostic procedure. In the evolution of medical practice, it is observed that many examinations and diagnostic procedures have progressed from being performed only when specifically indicated to being done routinely after their value is recognized. Such may be the case here.

Probably no other office procedure except blood pressure determination in the adult gives as high a percentage of positive diagnostic information. In recent years, patients in increasing numbers are asking for complete and "thorough" diagnostic surveys. Following the educational measures widely undertaken in the field of medicine, patients appreciate the value of routine examinations as protective measures for themselves. When physicians and patients realize the positive benefits of proctoscopy, such examination will come to be expected.

In a recent study of 1000 routine male admissions (ages 21 to 82, average 53 years) to a Veterans Administration Hospital, Walske et als[1] found 151 or 15 per cent had tumors of the colon. Of these, 81 were benign and 70, or 46 per cent, were malignant. Carcinoma of the colon is usually preceded by a polyp.

Walske obtained estimates that in 1953, 18,000 to 33,000 deaths were caused by cancer of the colon. During the same period, pulmonary tuberculosis caused 18,000, and polio, 1700. Thus, cancer of the colon is a greater hazard than tuberculosis and polio combined. He has found 75 per cent of the lesions are within the 10 inches visible in a proctosigmoidoscopic examination.

The importance of these figures is increased in relation to the value of a proctoscopic examination when the location of the polyp is considered.

Spiesman and Malow[2] report that 7 to 10 per cent of patients over 35 have polyps, and that 70 to 85 per cent of all polyps of the colon occur in the lower 10 inches.

Finney[3] states that the barium enema does not reveal 5 per cent of existing neoplasms, and when polyps are included this is increased to 15 per cent. Also, he states that growths up to 8 inches from the anal margin can escape roentgen detection very easily. Consequently, the

[1] Walske B. R. et als: Meeting of the A.M.A., June 1954. To be published.

[2] Spiesman, M. G. and Malow, Louis: Meeting of the A.M.A., June 1954 Scientific exhibit.

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recognition of lesions in this location is dependent upon digital and sigmoidoscopic examination. Accordingly, since the chance of discovering a colonic lesion that is actually or potentially malignant exists in probably 10 per cent of routine physical examinations, such a procedure should become a part of the examination, and eventually be so accepted by the patient.

The reluctance of the patient can usually be met by adequate explanations. He will reasonably ask why it should be undertaken, and what advantages proctoscopy has over the other sources of data. When the possibility of discovering tumors is outlined to him, the procedure will usually be agreed upon. In such a case, however, there is always the danger that the hidden fear of cancer will linger. The inertia of the physician can be lifted appreciably by having suitable professional experience, and also, by having proper instruments. Important, but not realized in the field of mechanical assistance for this examination, is the need for efficient aspirating equipment. Only by such means can the procedure be assured of providing a proper view and yielding dependable information.

In addition to giving patients an increased degree of protection against the cancer hazard, proctoscopic examination may give a proven explanation to symptoms existing from other causes, and discover conditions which at the time are producing no symptoms. Specimens of bowel content and mucus so obtained are valuable for culture. The procedure gives first hand information concerning the various inflammatory disorders of the colon, as well as the many conditions related to hemorrhoids.

In summary, the physician has approximately a 10 per cent chance of finding lesions that are actually or potentially malignant in a routine proctosigmoidoscopic examination. Such an examination will afford the physician valuable information and will afford the patient a degree of protection against malignancy equal to that in any other procedure currently available in the various fields of medicine.

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THE DEATH OF DR. ROY B. HARRISON

Dr. Roy B. Harrison, one of our most distinguished and outstanding physicians, died on July 25, 1954. With his passing the physicians and the people of Louisiana lost a friend whose kindness and service touched the lives of all.

For a period of forty-two years he has been active in maintaining the position of physicians in this state and over the nation, at the same time contributing materially towards the advancement of the standards of practice in the state. At the 1954 meeting of the Louisiana State Medical Society, a silver scroll was presented to him in recognition of his great service to medicine. This visible testimony of the esteem with which he was held by the physicians of our state is a small measure of his contribution through the years to better medicine.

The legal aspects of practice, the protection of the public against cults or quacks, and the maintenance of high standards within the profession, were ideals amounting to a dedication with him. In the past thirty-two years, he and Dr. C. Grenes Cole courageously led the fight in each legislature to prevent Chiropractors from being legalized in Louisiana. It is largely through efforts such as these that the conditions of practice are so favorable in Louisiana for physicians and that the public receives the untold benefit of medicine that is practiced on a high plane. As chairman of the Public Policy and Legislation Committees of the Orleans Parish and Louisiana State Medical Societies for many years, his services to those societies and to our people are unexcelled in opposing all legislation detrimental to the best interest of medicine.

Dr. Harrison's career covered many places where he could serve his fellow physicians and his fellow man. He graduated from Tulane University Medical School in 1912 and was licensed to practice the same year. He served as an in-

tern at Charity Hospital in New Orleans 1910-1912; was Instructor in Surgery at Tulane 1912-25; Professor of Clinical Surgery at L.S.U., 1931-35; Senior Visiting Surgeon at Presbyterian Hospital 1912-15 and Associate Chief Surgeon 1918-24; Senior Member, Southern Baptist Hospital Staff since its formation in 1927, and President of the Staff 1934-35; Fellow of the American College of Surgeons since 1929 and certified by the American Board of Surgery in 1937.

Dr. Harrison was President of the Federation of the State Medical Boards of the United States in 1935. He was a member of the National Board of Medical Examiners from 1942-1953, and a member of its Executive Board from 1946 to the time of his death. He also served as a member of the Advisory Council on Medical Education of the American Medical Association.

Dr. Harrison was the first President of the Surgical Association of Louisiana of which he was co-founder and organizer in 1947-48.

In 1932 Dr. Harrison was honored with the Presidency of the Louisiana State Medical Society. He was Secretary-Treasurer of the Louisiana State Board of Medical Examiners from 1921 to 1953. In this capacity thirty-two years, he was able to contribute without end to the establishment of proper standards of practice. Dr. Harrison was kind and understanding. His judgment and valued counsel was a source of assistance to many. He was one of our great medical leaders in Louisiana. He leaves a medical heritage to his profession for which his colleagues and the lay public should forever be grateful. We honor his memory "for all that he was: a good citizen, a great doctor, and a true friend of organized medicine."

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ORGANIZATION SECTION

The Executive Committee dedicates this section to the members of the Louisiana State Medical Society, feeling that a proper discussion of salient issues will contribute to the understanding and fortification of our Society.

An informed profession should be a wise one.

LEGISLATIVE MATTERS

Louisiana's 1954 Legislature has ended a stormy and controversial session, and Medicine has maintained its respected place in the State's life and economy.

Much has been done to educate the public to the fallacy of the Chiropractic doctrine; the chiropractors failed again to create their own board of examiners. They did manage to bring one of their bills to the floor of the House, however, after a favorable vote in committee.

All ordinary Chiropractic licensure bills were killed in committee, but a resolution proposing a constitutional amendment was reported favorably for a test on the House floor. The amendment would have added one sentence to the Louisiana Constitution: "The practice of Chiropractic is not the practice of Medicine."

(Louisiana's Supreme Court has ruled otherwise. This amendment would have allowed any person to declare himself a chiropractor—without any training at all—and begin practice of the healing arts. There would have been no regulation whatever.)

Subsequently, the author of the bill amended it from the floor of the House (beyond control of the committee), to include all of the provisions of the original licensure bill. This parliamentary maneuver was abortive; the proposal was defeated by a vote of 19 For, 48 Against.

Another important measure for the control of illegal practice was lost when the House disapproved an increase in penalties for violations of the Medical Practice Act. The State Board of Medical Examiners has, however, been allowed additional funds for its supervisory work, through slightly increased renewal fees, and this will have some salutary effect.

In addition to these measures, the physicians of Louisiana were interested in many other bills affecting them or their patients. All of these bills were closely studied by the Committee on Public Policy and Legislation, and positive steps were taken to make the Society's position known.

Following is a digest of the bills studied, with final action of the Legislature and the Governor indicated:

H. 1258 (Roberts, substitute for H. 371)

Changes supervision of evaluation center for exceptional children from Board of Health to Department of Institutions. ACT 479.

S. 164 (Toler) Statewide rabies control. ACT 663.

S. 230 (Toler) Increases temporary fee charged by Board of Medical Examiners from $5 to $10. ACT 693.

S. 244 (Toler) Designates East Louisiana State Hospital, Central Louisiana State Hospital and Southeast Louisiana Hospital for treatment of alcoholics, and provides for commitment. ACT 701.

S. 323 (Mahoney) Director of New Orleans Charity Hospital to be appointed by Board of Administrators. ACT 719.

H. 242 (Bruns) To license physiotherapists under Board of Medical Examiners. WITHDRAWN.

H. 331 (Casey) To regulate maintenance of electrical devices in physicians' offices. WITHDRAWN.

H. 1096 (Webb et al) To license dispensing opticians. WITHDRAWN.

H. 1029 (DeVille et al) Pertaining to commitment of mental patients in state institutions. With S. 244 (ACT 701).

H. 687 (Husser, Cefalu) To license medical technicians. WITHDRAWN.

H. 1175 (Grizzaffi) Permits "truthful" advertising by optometrists of price, etc. WITHDRAWN.

H. 624 (Fremaux et al) Appropriate $150,000 out of Rockefeller Fund surplus for health center in Acadia parish. VETOED.

H. 637 (Aycock and Grizzaffi) Appropriate $150,000 out of Rockefeller Fund surplus for health center in St. Mary parish. VETOED.

H. 1155 (Webb) Appropriate $450,000 for children's TB ward. VETOED.

H. 1178 (Bruns and Faulk) Create Louisiana Crippled Children's Commission. VETOED.

S. 24 (Sockrider) Create charity hospital at Lake Charles. VETOED.

H. 46 (McCollister, Roberts and Gardner) Appropriate $225,000 for two years for an evaluation center for exceptional children. ACT 258.

H. 81 (Cagle and Jones) Appropriate $107,250 for veterinary research center at LSU. ACT 264.

H. 159 (Hargrove) Require pre-marital medical examination of both parties. ACT 284.

H. 174 (Beeson) Appropriate $25,000 per year to Ochsner Foundation Hospital for indigent services. ACT 285.

H. 228 (Begnaud, Webb and Cleveland) Appropriate $25,000 per year to Lafayette Charity Hospital for clinical training of collegiate student nurses. ACT 296.

H. 283 (Hargrove and McDonald) Appropriate $15,000 per year to Pharmacy Board to enforce barbiturate and stimulant acts. ACT 305.

H. 344 (Clark et al) Appropriate $29,500 per year to New Orleans EENT Hospital for charity patients. ACT 317.

H. 455 (Vetter) Three members of board of Confederate Memorial Medical Center in Shreveport must be residents of parishes other than Caddo. ACT 330.

H. 479 (Jack, Gardner, Smith and A. D. Brown) Authorize Confederate Memorial to sell old hospital to City of Shreveport. ACT 334.

H. 534 (Radovich) Appropriate $15,000 per year to LaRocca Clinic at Algiers for charity services. ACT 346.

H. 720 (Gleason by request) Creates board of examiners for sanitarians. ACT 371.

BEST DEFENSE AGAINST MALPRACTICE SUITS

An examination of malpractice suits reveals the significant fact that these claims arise almost invariably out of the first course of treatment. In other words it is rare indeed for an old patient, unless the action is justified, to file suit against his physician. It follows that the physician should be especially "malpractice conscious" in dealing with the new or casual patient.

The majority of malpractice actions can be avoided by scrupulous attention to the requirements of good medical practice. There will be few cases of injury resulting from the actions of misguided or malicious patients when practitioners understand fully how to protect themselves under the law. Prevention is the best defense against suits for malpractice.—Louis J. Regan, M. D., LL. B., in New England Journal of Medicine.

NATIONAL EMERGENCY MEDICAL SERVICE

As part of the AMA meeting in San Francisco a meeting was held for the Committee on National Emergency Medical Service. This meeting was extremely well planned and as a result of the conference, it is evident that we will have to change our way of thinking in regard to Emergency Medical Service in case of a major disaster.

As you know, the change over the past ten years has been from the block buster to the atomic bomb and now to the hydrogen bomb, and whereas there is a great step between the atomic bomb and the hydrogen bomb, it is not nearly so great as from the block buster to the atom bomb.

In brief the meeting stressed some three major points: (1) Training of the individual person in evacuation in order to protect himself and to save as many other people as possible. (2) Establishment of law and order. (3) The provision of medical care which in itself is broken down into two parts; that is, that which can be furnished by local medical personnel and aid personnel and second, that which must come from outside sources.

The present conception seems to be that in time of a major bombing, at least seventy-five per cent of the local hospital facilities will be destroyed.

For this reason the plans at present seem to be to have emergency medical service provided by outside facilities in the form of portable hospitals or by transferring patients to such a place where hospital facilities are available.

For that reason, it seems apparent that we need to stress, in our capacity as reasonable advisors, the above three points. It has been my thought that it might be well for us to have a meeting and discuss this in more detail sometime in the next several months. Along these lines, I have contacted General Woolfley who is the state chairman of Civil Defense and plan to arrange with him an outline of the matters which should be discussed.

While I personally am not an alarmist, it was rather striking to me that no one at this conference talked about "if" a hydrogen attack occurred, but each one seemed to say "when". Of course, this is directed toward getting our services organized and being prepared for an emergency. To my mind, the training of the individual so that he can be evacuated by automobile as rapidly as possible appears the main problem, particularly in any type of industrial location. Along these lines, it has been suggested that an evacuation plan should be worked out, should an attack occur in the day time or at night because of the different concentrations of the civilian population at these two times.

Moss M. Bannerman, M. D., Chairman
Committee on National
Emergency Medical Service

MEDICAL NEWS SECTION

CALENDAR

PARISH AND DISTRICT MEDICAL SOCIETY MEETINGS

Society	Date	Place
Calcasieu	Fourth Tuesday every other month	Lake Charles
East Baton Rouge	Second Tuesday of every month	Baton Rouge
Morehouse	Third Thursday of every month	Bastrop
Natchitoches	Second Tuesday of every month	
Orleans	Second Monday of every month	New Orleans
Ouachita	First Thursday of every month	Monroe
Rapides	First Monday of every month	Alexandria
Sabine	First Wednesday of every month	
Second District	Third Thursday of every month	
Shreveport	First Tuesday of every month	Shreveport
Vernon	First Thursday of every month	

POLIO VACCINE TRIAL NEEDS PHYSICIANS' AID AS IT MOVES INTO EVALUATION PHASE

More than 600,000 children have completed three inoculations, in the field test of the trial polio vaccine developed by Dr. Jonas E. Salk of the University of Pittsburgh. The emphasis now shifts to the evaluation study under the direction of Dr. Thomas Francis, Jr., University of Michigan School of Public Health. The validity of the evaluation is dependent upon data gathered on poliomyelitis cases in the test groups, *including those children in the first three grades who did not get vaccine.*

In addition, data on cases among family members of participating children are an integral part of the study. Since the number of poliomyelitis cases among the test groups may not be large, it is essential that all cases are completely reported. Early diagnosis, prompt reporting and follow-up, and the securing of *necessary epidemiological information and laboratory specimens* are important factors in the evaluation.

An outline of procedures and copies of necessary forms have been sent to local and state health authorities. It is important that physicians in areas where vaccinations were not given, cooperate in the study by notifying local or state health officers of cases occurring among children who participated in the trials and then migrated to another area and children who go to summer camps. Local health officials also need information on participating children who receive injections of Gamma Globulin.

This phase of the study will depend, to a large degree, on the whole-hearted cooperation of practicing physicians.

AMERICAN COLLEGE OF CHEST PHYSICIANS ELECTS OFFICERS

The American College of Chest Physicians registered 1150 physicians and guests at its 20th Annual Meeting held in San Francisco, California, June 17-20, 1954. This was the largest registration of any of the previous College meetings held on the west coast.

The following officers were elected for the year 1954-1955:

President, William A. Hudson, Detroit, Michigan.

President-Elect, James H. Stygall, Indianapolis, Indiana.

First Vice-President, Herman J. Moersch, Rochester, Minnesota.

Second Vice-President, Burgess L. Gordon, Philadelphia, Pennsylvania.

Treasurer, Charles K. Petter, Waukegan, Illinois.

Assistant Treasurer, Albert H. Andrews, Jr., Chicago, Illinois.

Chairman, Board of Regents, Donald R. McKay, Buffalo, New York.

Historian, Carl C. Aven, Atlanta, Georgia.

Dr. Lawrence H. Strug of New Orleans was elected Governor of the College for the state of Louisiana.

The 21st Annual Meeting of the College will be held in Atlantic City, New Jersey, June 2-5, 1955.

THE AMERICAN CONGRESS OF PHYSICAL MEDICINE AND REHABILITATION

The 32nd annual scientific and clinical session of the American Congress of Physical Medicine and Rehabilitation will be held September 6-11, 1954 inclusive, at the Hotel Statler, Washington, D. C.

Scientific and clinical sessions will be given September 7, 8, 9, 10 and 11. All sessions will be open to members of the medical profession in good standing with the American Medical Association.

In addition to the scientific sessions, annual instruction seminars will be held. These lectures will be open to physicians as well as to therapists, who are registered with the American Registry of Physical Therapists or the American Occupational Therapy Association.

Full information may be obtained by writing to the executive offices, American Congress of Physical Medicine and Rehabilitation, 30 North Michigan Avenue, Chicago 2, Illinois.

THE WIDOWS

The world never tires of reading about widows, their numbers, their habits and their habitats. Presently, according to the Metropolitan Life Insurance Company, there are just about 7,500,000 widows in the United States and every year a hundred-thousand join that sisterhood. By 1960 the number will exceed 8,000,000. All this implies that male-kind is seldom the survivor.

Precisely it is true that female spouses outlive their counterparts. But it is easy to overlook the fact that if males and females enjoyed an equal length of life still there would be many hundreds of thousands of widows solely due to the fact that at marriage the bride usually is the junior of the bridegroom. Indeed there are widowers, too, but there is much less concern in the numbers of widowers. Only the marriage bureaus get excited. These widowers are relatively unimportant and are accorded a near nothingness in legislation. Who ever heard of any plan for pensions for widowers?

Of all widows, 50 per cent are 65 years or older but even so that age does not entirely remove them from the marts of marriage. Only 10 per cent are younger than 45. Characteristically the widow has become an urbanite, 73 per cent preferring the conveniences of city life. Not always does it necessarily follow that such life is one of delight since somewhere near half, but more particularly those in the younger brackets, have relatives including their own children living with them.

During the war period a commonplace pleasantry was that "maybe after all the war would be won if the grandmothers just hold out." So as to the present and lately, and abandoning all facetiousness, truly it may be said that when it comes to manpower in industry these widows constitute a never-failing reservoir, and their industrial usefulness by no means is limited to the young. Grandmothers and widows have a place in industry.—Industrial Medicine and Surgery.

TEACHING AND RESEARCH FELLOWSHIP INTERNATIONAL ACADEMY OF PROCTOLOGY

The International Academy of Proctology announces the establishment of a Teaching and Research Fellowship in proctology under the direction of Dr. Marcus D. Kogel, Dean of the newly formed Albert Einstein College of Medicine, New York City. The Academy has voted a $1,000 Annual Grant for each of three years to assist in the development of research and educational projects in proctology at the University.

One of the suggested projects is the establishment of a pathological tissue slide "library" for teaching purposes, under the direction of Dr. Alfred Angrist, Professor of Pathology.

As emphasized by the founder and Secretary of the International Academy of Proctology, Dr. Alfred J. Cantor, Flushing, New York, at the time of the Sixth Annual Convention of the Academy in Chicago, the major function of the Academy is educational. All Academy funds are to be used for research and teaching projects in proctology so that earlier diagnosis and better treatment of patients with diseases of the colon and rectum may be made universally available.

The Academy offers a Teaching Seminar, open to all physicians without fee, each year. Research Fellowships in proctology are sponsored by the Academy, and three such Fellowships were voted at the time of the last Annual Meeting. Dr. Earl J. Halligan, Director of Surgery of the Jersey City Medical Center, and International Secretary-General of the Academy, is in charge of a Research Fellowship at the Jersey City Medical Center. Additional Fellowships were voted to be established in the Mid-west and on the West Coast of the United States.

BASIC SCIENCE COURSE IN OTOLARYNGOLOGY

The Department of Otolaryngology, University of Illinois College of Medicine, announces its basic science course in otolaryngology offered by its affiliated hospitals. This combined postgraduate course and residency will begin its 1954-55 session on July 1, 1954. Other openings occur throughout the year. Residencies are available at either the Research and Educational Hospital or the Illinois Eye and Ear Infirmary, or a continuation of the training program may be arranged for the Veterans Administration Hospital at Hines.

A stipend is offered on the following basis:

First year residency	$1320 annually
Second year residency	1620 annually
Third year residency	1920 annually

Application forms are available on request to the Department of Otolaryngology, University of Illinois College of Medicine, 1853 West Polk Street, Chicago 12.

ONLY SCIENTIFICALLY-BASED REDUCING DIETS ARE SAFE

Are reducing diets safe?

Yes, they are safe and effective if they are based on sound, scientific medical knowledge and are prescribed by a physician to meet the individual's needs.

"All other diets should be viewed with suspicion; in fact, they should be completely avoided," Dr. Max Millman, Springfield, Mass., wrote in Today's Health magazine, published by the American Medical Association. "Not only are they totally ineffective in the long run, but they are, as a rule, harmful to health and nutrition.

"Dieting today is the most important and most valuable method in the treatment of obesity. Drugs, exercise and psychotherapy may lend a helping hand but, unless food intake is properly restricted along with them, the results will be either negligible or nought.

"Ready-made diets advocate the same food and the same number of calories for all would-be reducers. This is a mistake. A diet is a prescription which, instead of drugs and chemicals, calls for definite amounts of specific foods. Therefore, it has to be individualized. Our nutritional needs vary greatly in accordance with many factors, including size, age, sex and occupation. The degree of obesity and the desirable rate of weight loss also have to be seriously considered."

NEW DRUG EFFECTIVE IN TREATING TOXEMIA OF PREGNANCY

Protoveratrine, a relatively new drug, is a valuable adjunct to the obstetrician's armamentarium in the management of toxemia of pregnancy, in the opinion of Dr. Edward Meilman, Boston. Toxemia of pregnancy, a series of pathological conditions occurring in pregnant women, is characterized by rapid weight gain, accumulation of fluid, disturbances of vision, high blood pressure, headache, excessive albumin in the urine, and convulsions.

Although use of protoveratrine is not intended to replace certain fundamentals of treatment in toxemia such as bed rest and sodium restriction, it offers prompt control of the symptoms, Dr. Meilman wrote in the Journal of the American Medical Association.

He reported on the use of protoveratrine in 17 pregnant women suffering from various forms of toxemia of pregnancy. In all cases, prompt relief was obtained following use of the drug.

GASTROENTEROLOGICAL CONVENTION

The Nineteenth Annual Convention of the National Gastroenterological Association and the First Annual Convention of the American College of Gastroenterology will be held at The Shoreham in Washington, D. C. on October 25, 26 and 27, 1954.

In addition to several interesting individual papers on gastroenterology and allied fields, the program will include a panel discussion on "Twenty-Five Years' Observation of the Gallbladder Controversy"; a panel discussion on "Amebiasis" by members of the staff of the National Institutes of Health, Bethesda, Md., and a symposium on "Esophageal Varices".

The Sixth Annual Course in Postgraduate Gastroenterology, under the personal direction of Dr. Owen H. Wangensteen of Minneapolis, Minn. and Dr. I. Snapper of Brooklyn, N. Y., will be given on October 28, 29 and 30, 1954 at The Shoreham and Walter Reed Army Hospital. Participating in giving the Course will be a distinguished faculty from the various medical schools and the staff of Walter Reed Army Hospital.

This will be the last Convention of the National Gastroenterological Association whose Fellowship have voted to become the American College of Gastroenterology.

The scientific sessions on October 25, 26 and 27 are open to all physicians without charge. The Postgraduate Course will only be open to those who have matriculated in advance.

Copies of the program and further information concerning the Postgraduate Course may be obtained by writing to: National Gastroenterological Association, 33 West 60th Street, New York 23, N. Y.

FELLOWSHIPS FOR BASIC RESEARCH IN ARTHRITIS

The Arthritis and Rheumatism Foundation is offering the following research fellowships in the basic sciences related to arthritis:

1. Predoctoral fellowships ranging from $1,500 to $3,000 per annum, depending on the family responsibilities of the fellow, tenable for 1 year with prospect of renewal.
2. Postdoctoral fellowship ranging from $4,000

to $6,000 per annum, depending on family responsibilities, tenable for 1 year with prospect of renewal.

3. Senior fellowships for more experienced investigators will carry an award of $6,000 to $7,500 per annum and are tenable for 5 years.

The deadline for applications is October 15, 1954. Applications will be reviewed and awards made in January 1955.

For information and application forms, address the Medical Director, The Arthritis and Rheumatism Foundation, 23 West 45th Street, New York 36, N. Y.

YALE ARTICLE AGAINST SOCIALIZED MEDICINE

"Socialized Medicine: A Case For Free Enterprise" is the title of an article written for "Yale Scientific," which was published in the April issue.

A subtitle under the heading best describes the article as follows:

"Instead of repeating the familiar arguments against socialized medicine, the American Medical Association presents its positive program. In pointing out the past accomplishments, the present progress, and the future potential of the American medical system, the A.M.A. serves notice that the world's best medical system stands a fair chance of deteriorating under government control."

Anyone desiring a copy of the magazine can mail his request, with 35 cents, to Yale Scientific magazine, 244-A Yale station, New Haven, Conn.

TONSILLECTOMY AFFECTS SEVERITY OF POLIO

A polio victim who has had his tonsils removed is about four times more likely to have the serious bulbar type of polio than a patient who still has tonsils.

This finding, reported in a recent (July 24) Journal of the American Medical Association, was made after a study of more than 2,000 victims of a 1946 polio outbreak in Minnesota.

Gaylord W. Anderson, M. D., and Jeanne L. Rondeau, A. B., of the University of Minnesota School of Public Health, said their study did not show that persons without tonsils are more likely to get polio. However, if "recognizable" polio does occur, the patient without tonsils is in more danger of having the bulbar type. Aside from the first month after operation, when bulbar incidence is lower than in later months, it makes no difference how long before the polio attack the tonsillectomy was performed, they said.

Bulbar involvement occurs in over a third of the patients whose tonsils are not present at the time of the polio attack. Less than a tenth of the patients who have not had tonsillectomy show the bulbar type, which affects the grey matter in part of the brain, resulting in impairment of breathing and often requiring use of the iron lung.

There is much evidence that polio virus is so widespread that almost everyone is exposed to it, the Journal article said. But only a small number respond badly to the virus, with resultant paralysis.

CALEB FISKE PRIZE

The Trustees of what is considered America's oldest medical essay competition, the Caleb Fiske Prize of the Rhode Island Medical Society, announce as the subject for this year's dissertation "MODERN DEVELOPMENTS IN ANESTHESIA." The dissertation must be typewritten, double spaced, and should not exceed 10,000 words. A cash prize of $250 is offered.

For complete information regarding the regulations write to the Secretary, Caleb Fiske Fund, Rhode Island Medical Society, 106 Francis Street, Providence 3, Rhode Island.

ROY CARL YOUNG, M. D.
1895 - 1954

Dr. Roy Carl Young of Covington, Louisiana died at his home on June 12, 1954 after having an acute heart attack. He was born September 7, 1895 in Abbeville, Louisiana and was the son of the late Dr. Francis Fenwick Young who founded the first Fenwick Sanitarium in Abbeville in 1892, and in 1912 moved to Covington to establish the new Fenwick Sanitarium.

He was medical director and psychiatrist at the Fenwick Sanitarium at the time of his death and had served in this capacity since 1933.

Dr. Young graduated from Texas Medical University, Galveston, Texas in 1918 after which time he practiced in El Paso, Texas and Shreveport, Louisiana and after specializing in psychiatry located in Covington, Louisiana. He was a member of St. Peter's Catholic Church; St. Tammany Parish Medical Society; the Louisiana State Medical Society; The American Medical Association; The Southern Medical Association; The American Psychiatric Association, in which he was a Board member and a Fellow; Southern Psychiatric Association; and the National Private Psychiatric Association, in which he served for five years as its Treasurer. He was also quite active in civic affairs.

Dr. Young was a member of the State Society for many years and was loved and admired by his friends and colleagues. Members of the Louisiana State Medical Society wish to express to his widow, the former Florence Webber of Shreveport, and immediate members of his family, their sincere sympathy, and share with them their great sorrow and loss in his death.

BREATHING EXERCISES AID IN HELPING PERSONS STOP SMOKING

Exercises which teach heavy smokers proper breathing when not smoking may help them stop smoking, according to Dr. William Kaufman, Bridgeport, Conn.

"Many heavy smokers find it impossible to give up smoking for more than a day or so, even though they realize that smoking causes their unpleasant or even alarming cardiovascular and bronchopulmonary symptoms," Dr. Kaufman wrote in a recent (May 22) Journal of the American Medical Association.

"The patient may insist that, despite his tobacco-induced symptoms, the only time he feels emotionally relaxed and comfortable is when he is smoking."

Dr. Kaufman said he found the reason heavy smokers feel uneasy when they try to give up smoking is that they do not breathe properly when they are not smoking. Instead of proper steady, deep breaths, heavy smokers take short breaths when not smoking. This results in an uncomfortable sense of breathlessness and pressure on the chest, and may cause the individual to become uneasy, restless, tense, tired and anxious.

"As a result of these observations, it occurred to me that with breathing exercises, the heavy smoker might learn to breathe normally even when he was not smoking," Dr. Kaufman stated. "This would make it much easier for him to break himself of the tobacco habit."

—o—

BOOK REVIEWS

The Biochemistry of Gastric Acid Secretion; by Edward J. Conway, M. D. Springfield, Ill. Charles C. Thomas, 1952, pp. 185, Price $6.50.

Short chapters devoted to the histology of the gastric mucosa with reference to acid secretion, and a summary of present knowledge concerning the mode of stimulation of the parietal cells lead to an extensive comparison between the mechanisms for the production of acid by yeast cells during fermentation and those for acid production by parietal cells. Neutralization of acid in the parietal secretion by ammonia derived from the action of gastric urease on urea was emphasized, but left the reviewer unconvinced. The book is interestingly written but overpriced.

A. O. Kastler, Ph.D.

Cardiac Therapy; by Harold J. Stewart, New York, N. Y., Paul B. Hoeber, Inc. 1952, Pp. 622, Price $10.00.

This rather lengthy treatise is designed as a complete guide to cardiac therapy. The design of the book is that of completely independent chapters but some reference to other parts of the book is still necessary and unavoidable. The treatments of various disease states are considered individually along with brief and usually inadequate discussion of clinical manifestation, differential diagnosis, and pathologic physiology. It is recognized that the design of the book was not that of encyclopedic coverage but a number of individual disease states are too inadequately treated to be of any particular value in a book on therapy.

There are certain points which should be more clearly identified as controversial when they represent the opinion of the author in contrast to generally accepted ideas. Among a number of such opinions, the statement that the initial digitalizing dose of digitalis does not differ in adults and children seems worthy of special mention in this regard.

Each chapter is followed by an adequate list of references and the index is good. There are a number of points on which this book is to be recommended. Certain types of information are more readily available than in existing texts.

Clarence T. Ray, M. D.

May's Manual of Diseases of the Eye; edited by Chas. A. Perera, M. D. Baltimore, Maryland, Williams & Wilkins Co., 1953, pp. 512, $6.00.

This old familiar classic is the best loved of all text books, I do believe. It has retained its original size and is therefore compact, although new subjects have been added such as antibiotics, cortisone and corticotropin (ACTH), and retrolental fibroplasia. There is a splendid section on ocular requirements of the armed services.

In general, it may be said that diseases of the eye are covered very thoroughly for such a small volume. To be brief and to the point is an asset of which this book can truly be proud.

Jeanne Roeling-Hanley, M. D.

PUBLICATIONS RECEIVED

Little, Brown & Co., Boston: The Physician and his Practice, by eighteen authorities and edited by Joseph Garland, M. D.

W. B. Saunders Co., Phila.: Collected Papers of The Mayo Clinic and The Mayo Foundation, Volume XLV; Emergency Treatment and Management, by Thos. Flint, Jr., M. D.; Lectures on General Pathology, edited by Sir Howard Florey.

Charles C Thomas, Publisher, Springfield, Ill.: The Diagnosis and Treatment of Convulsive Disorders in Children, by Samuel Livingston, M. D.; A Dynamic Psychopathology of Childhood, by Lauretta Bender, M. D.

Dramamine's® Effect in Vertigo

Dramamine has become accepted in the control of a variety of clinical conditions characterized by vertigo and is recognized as a standard for the management of motion sickness.

Vertigo, according to Swartout, is primarily due* to a disturbance of those organs of the body that are responsible for body balance. When the posture of the head is changed, the gelatinous substance in the semi-circular canals begins to flow. This flow initiates neural impulses which are transmitted to the vestibular nuclei. From this point impulses are sent to different parts of the body to cause the symptom complex of vertigo.

Some impulses reach the eye muscles and cause nystagmus; some reach the cerebellum and skeletal muscles and righting of the head results; others activate the emetic center to result in nausea, while still others reach the cerebrum making the person aware of his disturbed equilibrium. *Vertigo may be caused by a disease or abnormal stimuli of any of these tissues involved in the transmission of the vertigo impulse, including the cerebellum and the end organs.*

A possible explanation of Dramamine's action is that it depresses the overstimulated labyrinthine structure of the inner ear. Depression, therefore, takes place at the point at which these impulses, causing vertigo, nausea and similar disturbances, originate. Some investigators have suggested that Dramamine may have an additional sedative effect on the central nervous system.

Repeated clinical studies have established Dramamine as valuable in the control of the symptoms of Ménière's syndrome, the nausea and vomiting of pregnancy, radiation sickness, hypertension vertigo, the vertigo of fenestration procedures, labyrinthitis and vestibular dysfunction associated with antibiotic therapy, as well as in motion sickness.

Any of these conditions in which Dramamine is effective may be classed as "disease or abnormal stimuli"* of the tissues including the end organs (gastrointestinal tract, eyes) and their nerve pathways to the labyrinth.

Dramamine (brand of dimenhydrinate) is supplied in tablets of 50 mg. and liquid (12.5 mg. in each 4 cc.). It is accepted by the Council on Pharmacy and Chemistry of the American Medical Association. G. D. Searle & Co., Research in the Service of Medicine.



The site of Dramamine's action is probably in the labyrinthine structure.

*Swartout, R., III, and Gunther, K.: "Dizziness:" Vertigo and Syncope, GP *8*:35 (Nov.) 1953.



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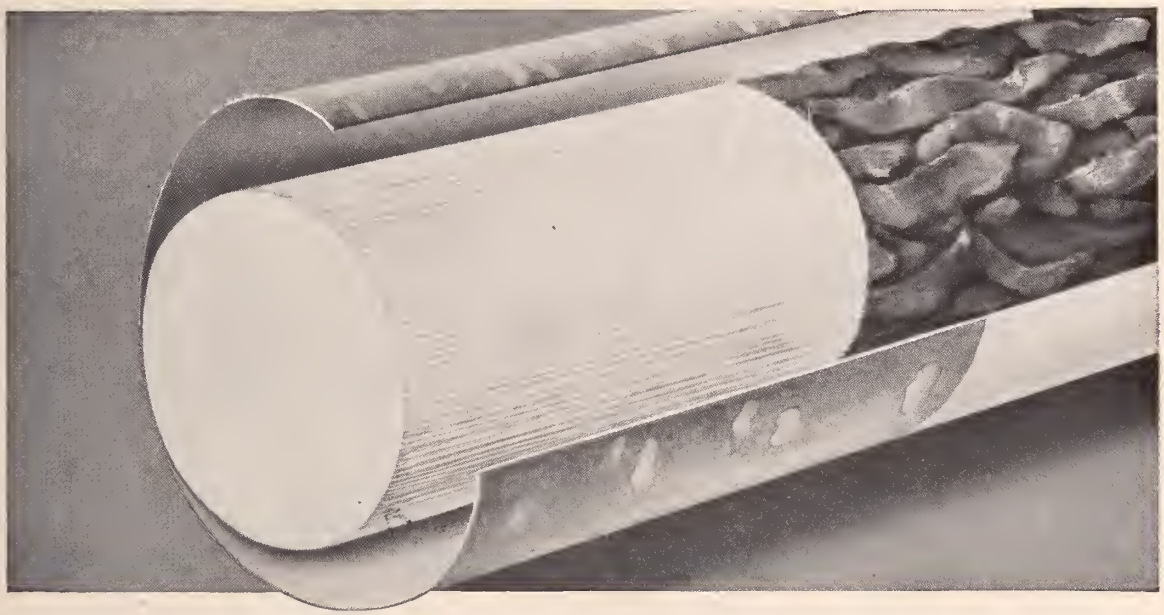
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Meat...

and Protein Nutrition in Cardiac Failure

Recent studies confirm previous clinical observations of the high incidence of hypoproteinemia and muscle wasting in patients with chronic cardiac failure. Recognition of these serious nutritional alterations prompts "the administration of large quantities of dietary protein and supplemental vitamins."[1]

Basic foods requiring primary consideration for providing adequate daily nutrition in such patients are:

> "Milk—1 pint; meat—4 ounces; vegetables—2 servings; fruit and fruit juices—3 servings; carbohydrate and fat to fulfill caloric needs.
>
> "In order to restore depleted protein levels, it is necessary to increase the protein component by adding meat servings . . . "[1]

Since anorexia usually complicates nutrition in cardiac failure, appetizingly prepared meat encourages adequate eating. The high protein content of cooked lean meat, 25 to 30 per cent, as well as its high biologic value, serves well in mitigating hypoproteinemia and muscle wasting.

Meat also contributes valuable amounts of B vitamins especially needed by the cardiac patient, including both the well-known and the less well-known members of the B complex. Iron, potassium, and phosphorus are among the minerals richly supplied by meat.

1. Shuman, C. R., and Wohl, M. G.: Nutritional Aspects of Heart Failure, J. Clin. Nutrition 2:5 (Jan.-Feb.) 1954.

The Seal of Acceptance denotes that the nutritional statements made in this advertisement are acceptable to the Council on Foods and Nutrition of the American Medical Association.



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WHEN SYMPTOMS ARE DISTRESSING BUT DISGUISED . . .

"It is strange," Malleson says, "how little clinical recognition" has been given to the "negative behavior" or "endogenous misery" of the woman with endocrine imbalance. Largely accountable for this, of course, is the patient's own reluctance to discuss these symptoms with her physician until she actually suffers from some of the more obvious menopausal symptoms such as hot flushes. Even then she may become so accustomed to her change in feeling she can't remember what it's like to feel well.[1]

Changes in the mood pattern are just a few of the many distressing symptoms of declining ovarian function which are so often disguised because they do not always coincide with cessation of menstruation, and at times will occur long before, and even years after. Other good examples are insomnia, headache, easy fatigability, arthralgia — and understandably so, when one considers that the loss of ovarian hormone "withdraws one of the most important metabolic regulators of the organism."[2]

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1. Malleson, J.: Lancet 2:158 (July 25) 1953. 2. Goldzieher, M. A., and Goldzieher, J. W.: Endocrine Treatment in General Practice, New York, Springer Publishing Company, Inc. 1953, p. 23.

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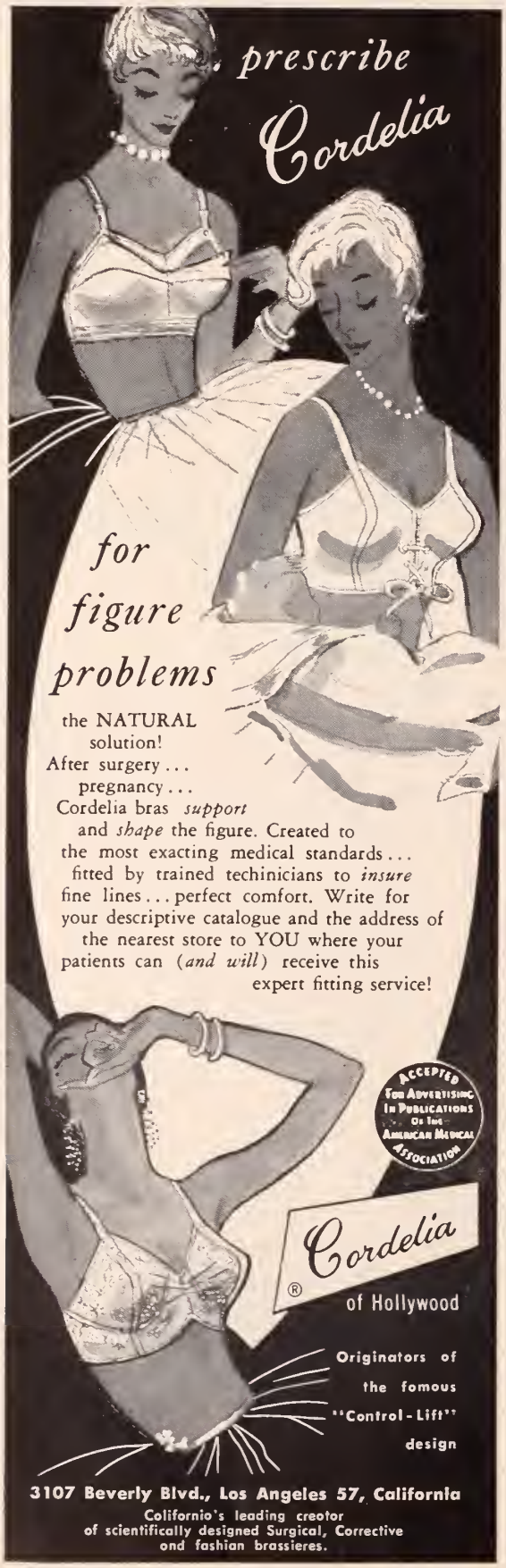
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Distrycin has an important advantage over streptomycin. It has the same therapeutic effect but ototoxicity is greatly delayed. Since the patient is given only half as much of each form of streptomycin as he would have on a comparable regimen of either one prescribed separately, the danger of vestibular damage (from streptomycin) or cochlear damage (from dihydrostreptomycin) is significantly lessened.

Signs of vestibular damage appear in cats treated with Distrycin as much as 100 per cent later than in animals given the same amount of streptomycin.

Cat treated with streptomycin shows no nystagmus after whirling.



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On dosage of 1 Gm. per day for 120 days, ototoxicity was as follows*:

	Vestibular damage % of patients		
	Mild	*Moderate*	*Total*
Streptomycin	12	6	18
Dihydrostreptomycin	6	0	6
Distrycin	0	0	0

	Cochlear damage % of patients		
	Mild	*Moderate*	*Total*
Streptomycin	0	0	0
Dihydrostreptomycin	12	3	15
Distrycin	0	0	0

**Heck, W.E.; Lynch, W.J., and Graves, H.L.: Acta oto-laryng. 43:416, 1953.*

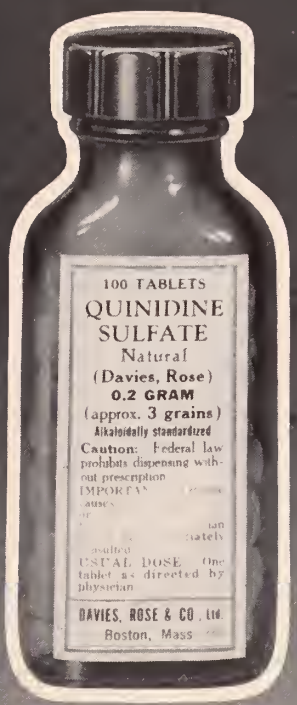
Distrycin dosage is the same as for streptomycin. In tuberculosis the routine dose is 1 Gm. twice weekly, in conjunction with daily para-aminosalicylic acid or Nydrazid (isoniazid). In the more serious forms of tuberculosis, Distrycin may be given daily, at least until the infection has been brought under control.

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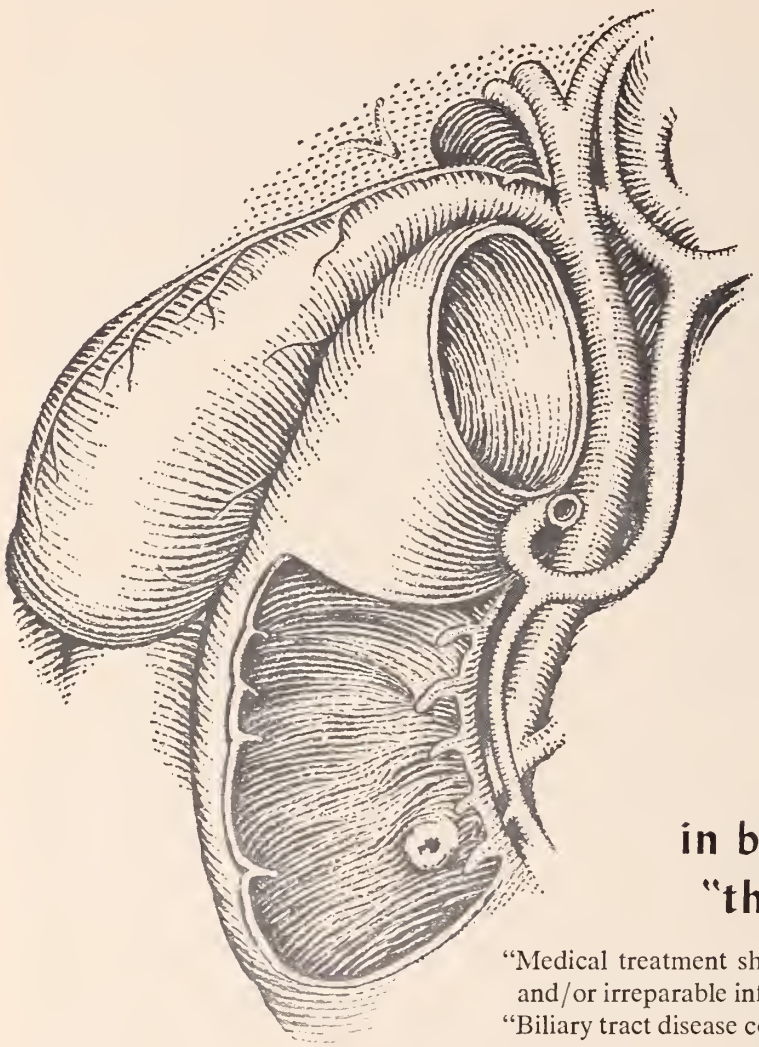
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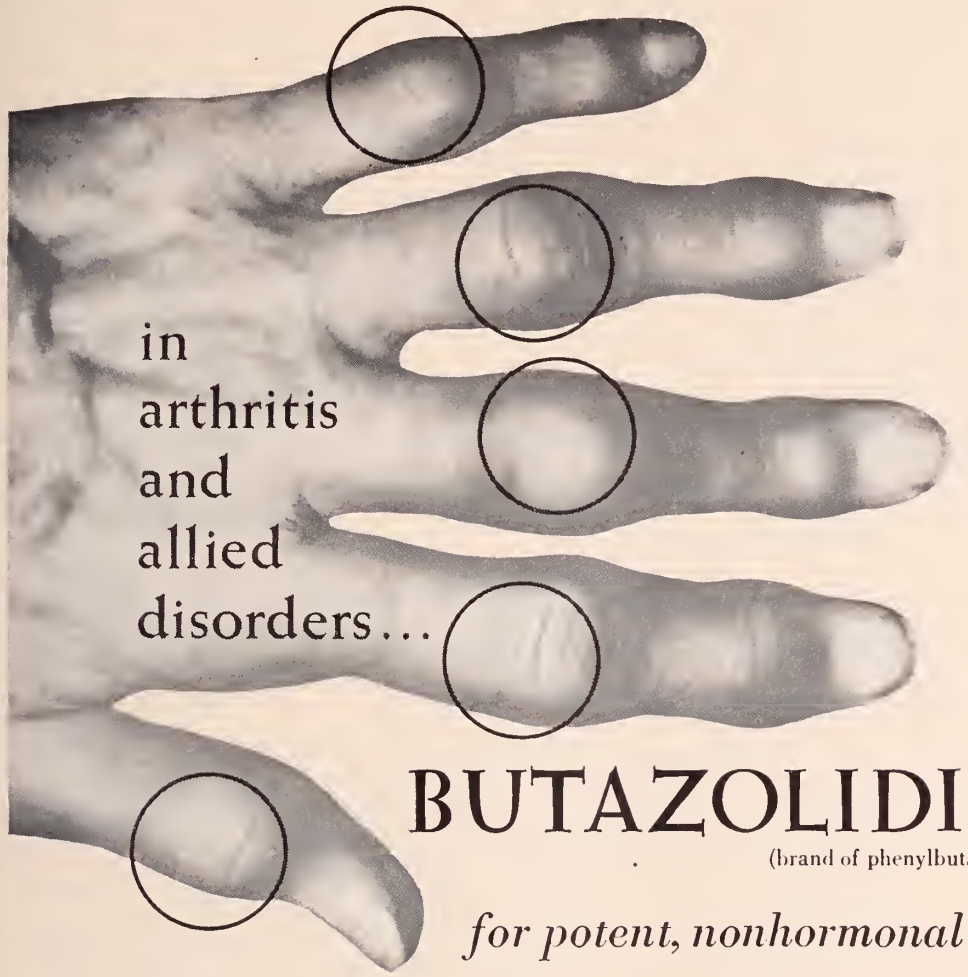
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1. Segal, H.: Postgrad. Med. *13*:81, 1953. 2. O'Brien, G. F., and Schweitzer, I. L.: M. Clin. North America *37*:155, 1953. 3. Beckman, H.: Pharmacology in Clinical Practice, Philadelphia, W. B. Saunders Company, 1952, p. 361.

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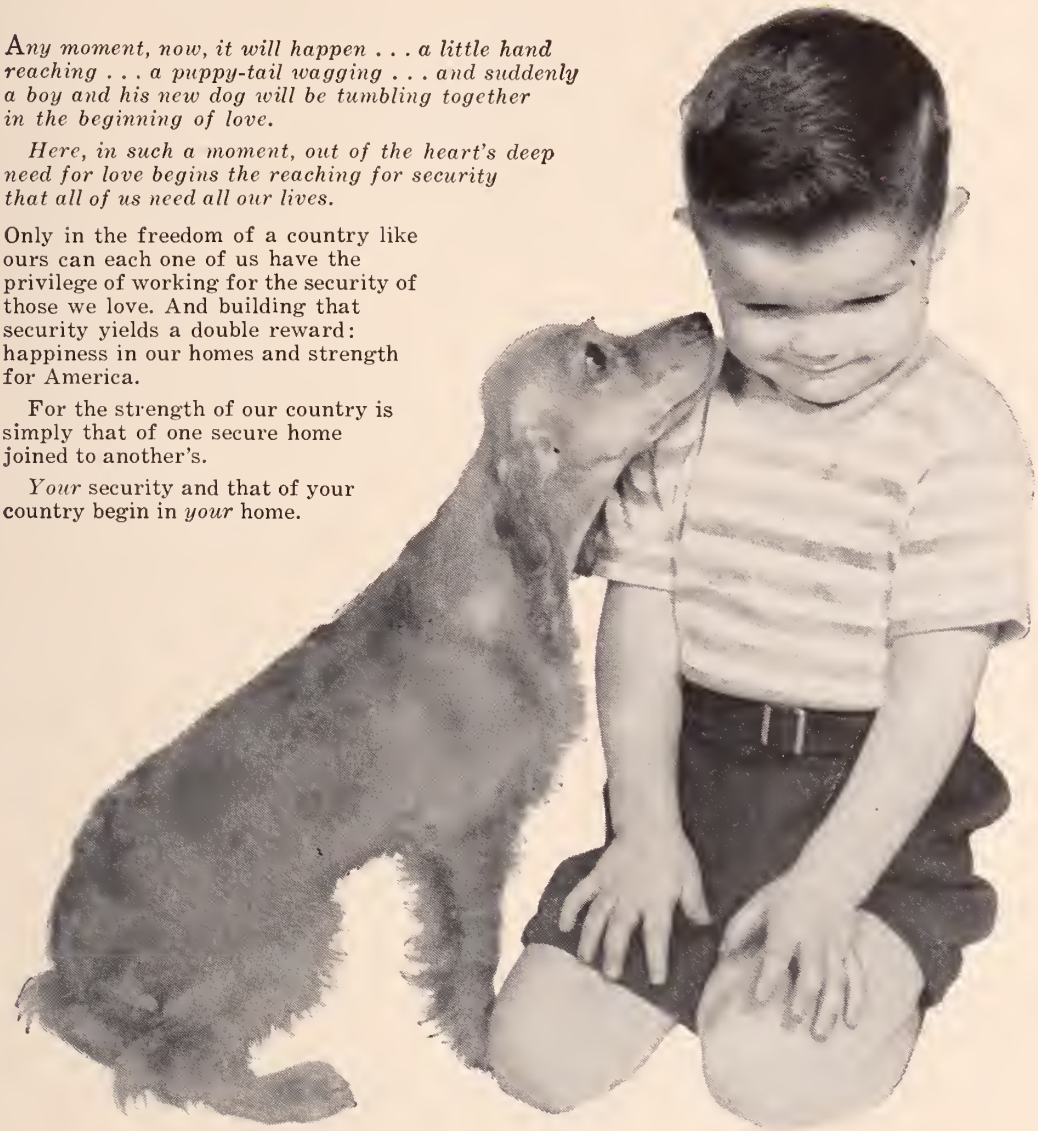
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16 mm., color, sound, showing time 28 minutes. Produced in 1953 by Tele-Programs, New York, for the American Cancer Society. Procurable on loan from local units of the American Cancer Society.

This is a documentary film presenting distinguished investigators in five avenues of research. It is narrated by Dr. Charles S. Cameron of the American Cancer Society. Beginning with Mendel's experiments in heredity, Dr. Clarence C. Little explains in location-shooting his work in genetics, which has established the extent of genetic and chromosomal influences on the development of certain animal cancers. From genetics the story then goes to the work in the field of hormones. Dr. Charles Huggins of the University of Chicago demonstrates some of his work in this field. From hormones the next step is to a study of carcinogens. Dr. Lewis F. Fieser, Sheldon Emery Professor of Organic Chemistry at Harvard, explains his work in a study of the structure of chemical compounds that produce cancer and his current work in seeking steroids related to cholesterol formed within the body, which may prove to be cancer producing. Then, chemotherapy is demonstrated by Dr. C. P. Rhoads of the Memorial Cancer Center, New York. Dr. John Bittner, Professor, Division of Cancer Biology, Medical School, University of Minnesota, explains his work in the field of heredity and virology, using his "mouse-milk" factor as proving the existence of a transmissible factor in the milk of mice, which apparently is responsible to some degree, for the development of mammary cancer in his animals. The cycle, as Dr. Cameron explains, is but a short step from the heredity factor to the Mendelian theory.

This is an excellent picture, and it should raise a hope instead of inducing cancerphobia. In addition, it affords the viewer an opportunity to hear about progress in cancer research and the arising hope of cancer cure from the lips of experienced researchers in the field, men whose names are well known internationally. The use of nonprofessional actors lends authenticity to the presentation. As a film production, it is very well done and it can be recommended for lay audiences.

* Reprinted from the
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Since the rickettsial diseases are difficult to differentiate clinically, physicians are requested to submit to the State Department of Health Laboratory 20 cc's of blood taken during the acute and convalescent periods for a complement fixation test for these diseases.

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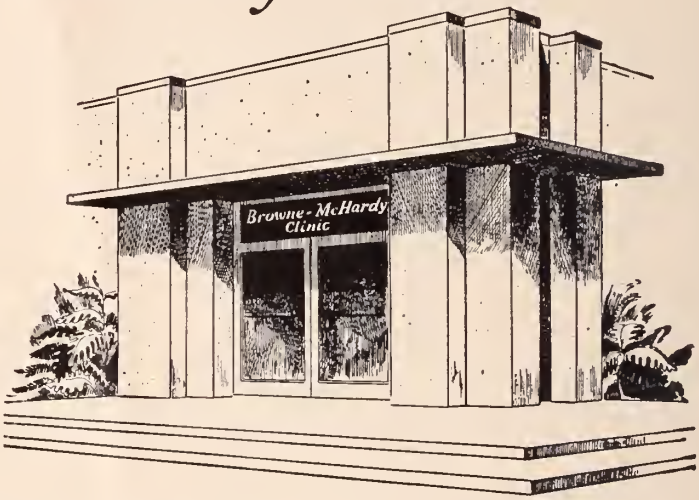
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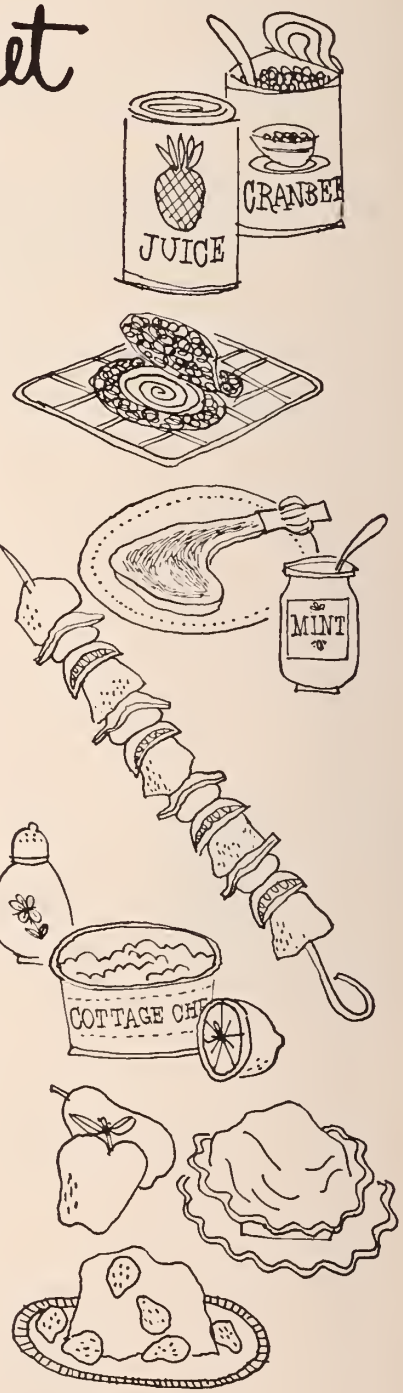
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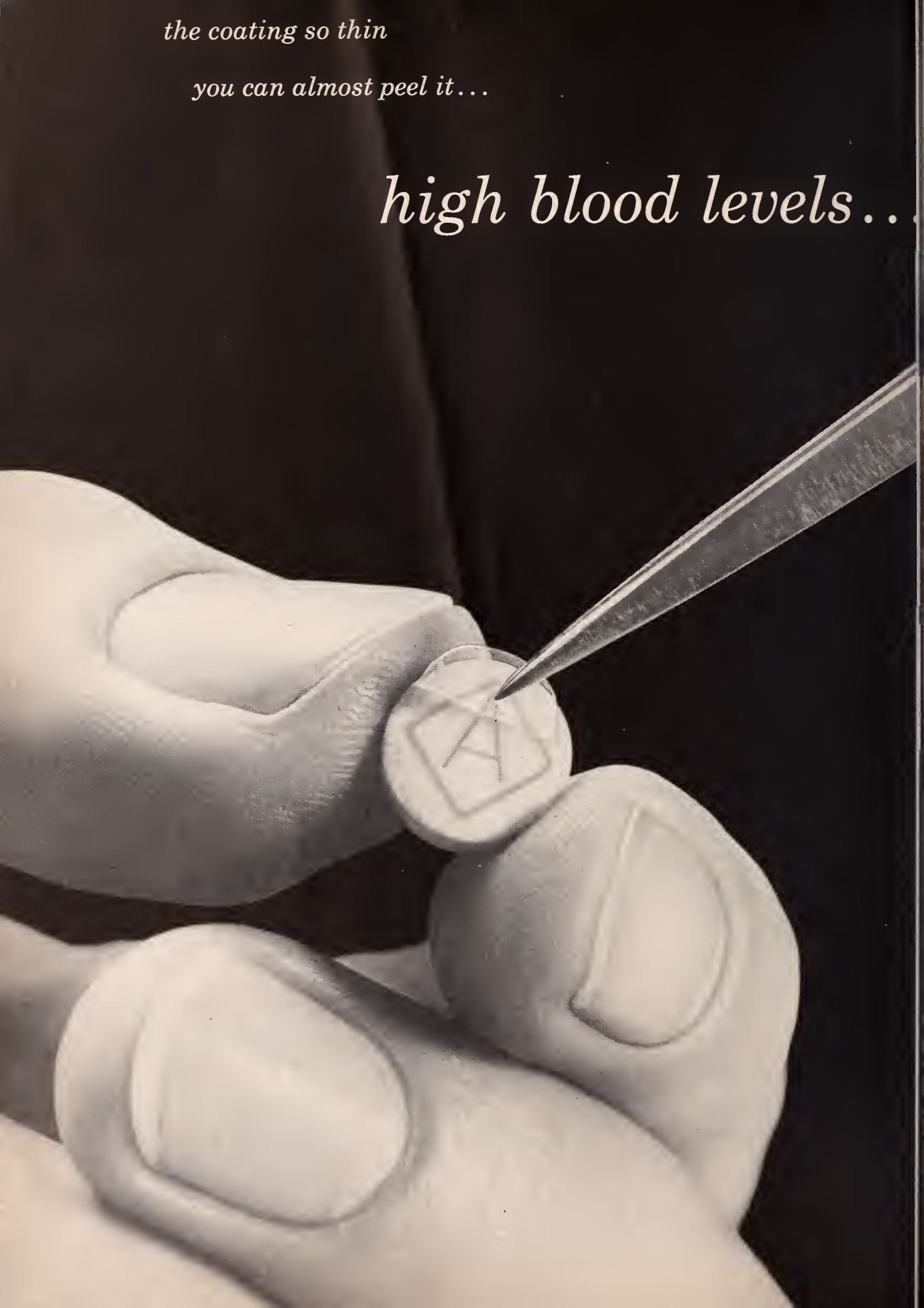
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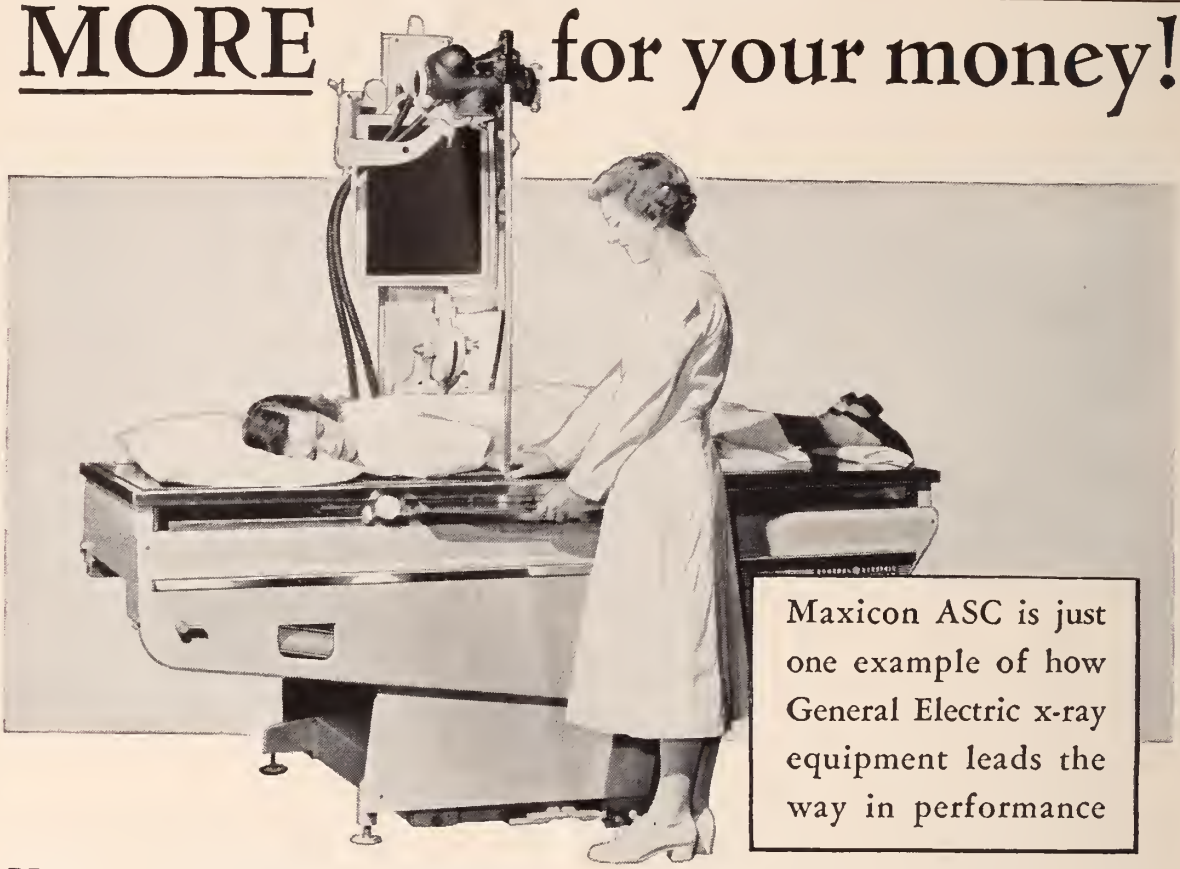
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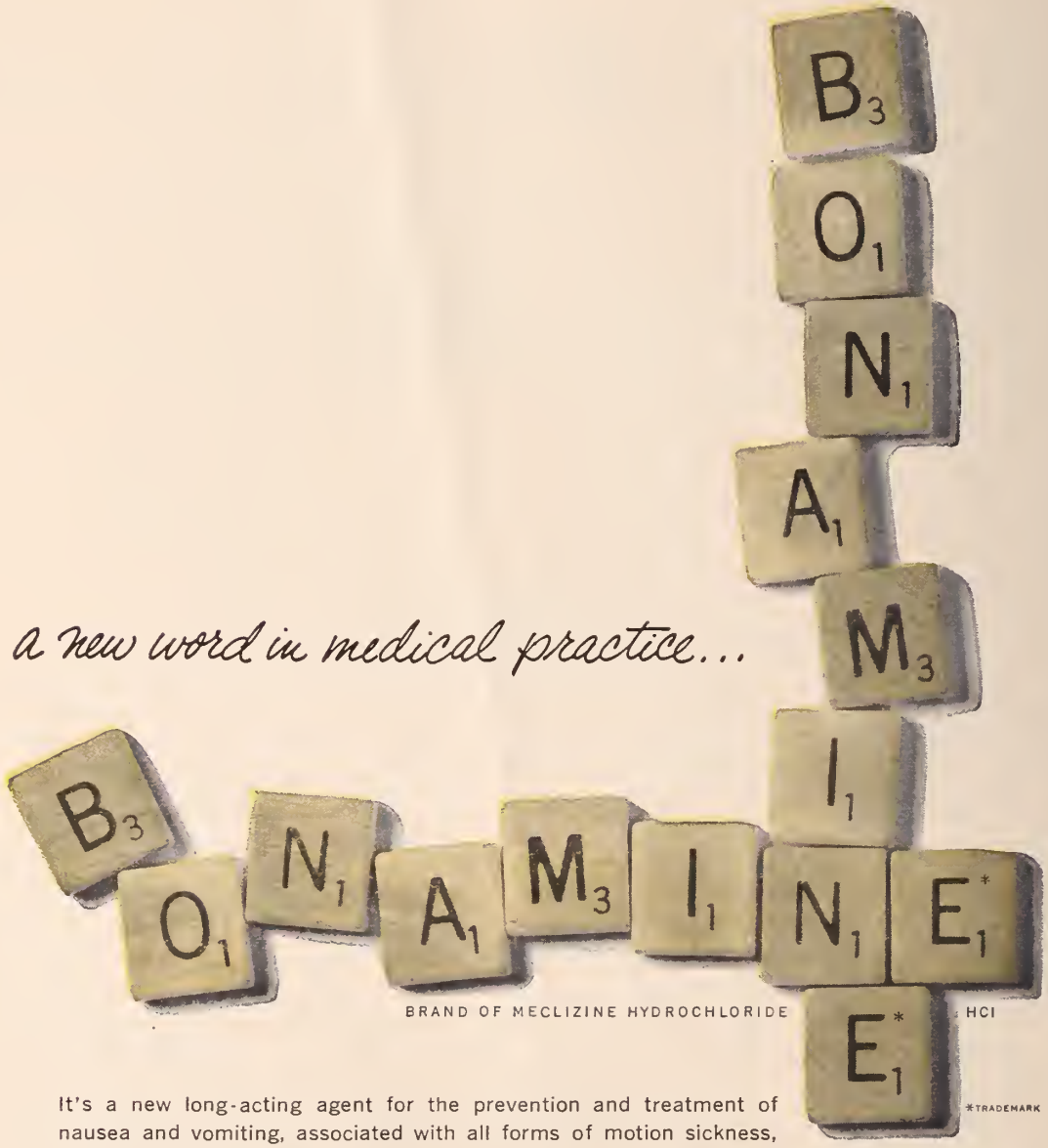
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ACUTE RENAL FAILURE *

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Lower nephron nephrosis is essentially a disease of the renal tubules accompanied by oliguria or anuria. The etiological factors are shock; pigment excretion as in crushing injuries, transfusion reactions from incompatible blood, intravenous distilled water administration, burns and blackwater fever; sulfonamide intoxication, hyperthermia, mushroom poisoning, carbon tetrachloride poisoning, severe infections and intoxications of all kinds, allergy and anaphylaxis, gastroenteritis, electrolyte disturbances, and hepatorenal syndrome.

The pathology consists of marked disorganization within the tubular cells, first in the ascending limb of the loop of Henle and next in the distal convoluted tubules. Damage is also extensive in the proximal convoluted tubules. The lesions are patchy with perfectly normal tubule cells lying side by side with completely necrotized segments of tubule. Reabsorption of the globin molecule from myoglobin in crushing injuries and the globin molecule of hemoglobin and pigment disturbances is supposed to produce the damage within the tubular cell. The pigment also obstructs the tubular lumens with casts producing further disturbance or function. Actually the pathogenesis is not as simple as this, for when animals receive intravenous injections of hemoglobin or myoglobin no lesions are produced in the kidney. The animal must be dehydrated and thrown into shock before the classical picture can be produced, and even then it is sometimes difficult. One is surprised at times to see that a human being may receive 500 cc. of completely incompatible blood without even developing oliguria. One patient the author saw received 4500 cc. of distilled water intravenously over a three-day period and had only brief oliguria. Decrease in glomerular filtration rate by chill, shock, dehydration, or in a reduction in blood volume enhances the likelihood of renal damage.

CLINICAL PICTURE

Early recognition is of great importance in preventing mismanagement. Urine output should be recorded carefully during the twenty-four to forty-eight hours after surgery or transfusion and someone should look at the color and character of the urine when it is first passed after one of these procedures or after a patient has been through a period of shock.

In heavy metal intoxication there may be actual diuresis for the first twenty-four to forty-eight hours after which oliguria sets in. Complete anuria is unusual and the patient usually passes 50 to 200 cc. of urine each twenty-four hours. In exceptional cases a normal urine flow of 2000 to 2500 cc. may continue, and the only clue to the diagnosis may be a rising blood NPN. Proteinuria is found constantly, and the urine usually has a dark appearance from hemoglobinuria or myoglobinuria in transfusion reactions, shock,

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and crushing injuries particularly. Nausea and vomiting begin early and become a problem in most patients who continue to take food or water. Sensorium is amazingly good in many well-treated patients throughout the course of the illness, despite marked chemical disturbances. However, crushed and infected patients often develop disorientation initially which is persistent. A rise in blood potassium or overzealous administration of fluids and salts can precipitate mental confusion. Edema is not a sign of the disease but it is a sign that fluid has been given in excess of the amount which the patient can eliminate. Hypertension is unusual if the patient is not overtreated. Convulsions usually result from potassium intoxication or cerebral edema, and are seldom due to hypocalcemia since the low blood calcium is counterbalanced by the low CO_2 combining power which produces an increase in the ionized calcium.

Cardiac dilatation, gallop, and pulmonary edema come from overhydration or transfusions. Fever is absent after the first few days unless there are complications.

A normochromic normocytic anemia appears early as a result of hemodilution, hemolysis, bone marrow depression, and other unknown causes. Leukocytosis of 20,000 or more may persist even into the postanuric phase. For the first day or two a specific gravity of 1.020 or better is maintained but after this the specific gravity of the urine drops to 1.010 and remains low. After the first day or two glycosuria is not seen even though the blood sugar is maintained at a high level with 25 per cent or 50 per cent glucose.

The blood sodium falls rapidly in all patients except in those with extremely careful fluid adjustment, in which it may remain normal. The blood bicarbonate, or CO_2 combining power, drops early in all patients except those who lose large quanities of chloride by vomiting, especially in pregnant patients who have a high gastric acidity. Occasionally, such a patient may have a moderate alkalosis.

About one-fourth of the patients have potassium intoxication with a blood potassium above 8 mEq/L. and three-fourths have some rise in potassium. The blood phosphorus is high and the calcium is low.

On about the third day, degeneration of the tubules begins and is usually complete about the tenth day. If an indwelling catheter is maintained the patient is found to excrete gradually increasing quantities of urine until urine flow reaches 700 to 1000 cc. after which it increases much more rapidly, and finally a real diuresis of 3000 to 4000 cc. of urine daily is established.

The patient is usually much sicker and the chemistries are more abnormal for the first few days after diuresis is established, and he does not feel good for about two weeks. Nausea remains a problem for at least a week after diuresis.

DIFFERENTIAL DIAGNOSIS

Victims of *mercury poisoning* may have a history of ingestion and may often have a bloody diarrhea with abdominal cramps. *Dehydration* seldom produces oliguria of less than 500 cc. a day unless the dehydration is sufficient to produce a reduction in blood pressure. The skin is inelastic and putty-like and the blood bicarbonate, or CO_2 combining power, falls less rapidly. Early hypertension and edema which are *not* seen with lower nephron nephrosis commonly accompany *acute glomerulonephritis* and help to differentiate the two. In later stages of glomerulonephritis the filtering units may be so severely damaged that oliguria is produced. Early hypertension and edema and a previous history of nephritis help in this diagnosis.

Bilateral cortical necrosis occurs usually in pregnant women, most frequently with premature separation of the placenta, but can be diagnosed in life only with a needle biopsy.

In *toxemia* of *pregnancy*, hypertension appears early and there is a rapid increase in the blood uric acid out of proportion to the increase in NPN.

Low salt syndrome is rare in stressful situations because the kidneys are usually retaining salt in the latter. However, if

large gastrointestinal losses have occurred it may result. When salt is given in the early postoperative period, oliguria of around 300 to 400 cc. may be produced. This may be differentiated from the lower nephron syndrome by the fact that a higher blood bicarbonate is present, thought to be caused by overactivity of the adrenal cortex.

The *prognosis* in cases uncomplicated by infection or injury is about 80 per cent recovery in properly treated patients. With infection or injury the mortality rate is raised to about 80 per cent. Death is due to pulmonary edema from transfusions or too much fluid, or it may be from potassium intoxication. Sudden death may occur any time after the sixth or seventh day even in the absence of potassium intoxication from unknown causes.

In about a third of the patients renal function never becomes any better than about 70 per cent of normal, which of course is perfectly adequate. It usually reaches its best level within three months after the illness.

TREATMENT

The aims of treatment are (1) to prevent protein catabolism since the end products of protein catabolism are toxic, (2) to keep the body water normal, and (3) not to give anything harmful. If the patient can retain food or fluid, a Borst diet, which is a butter and sugar mixture of about 2400 calories per day, is given by mouth, or a Bull diet which is a coconut or peanut oil and dextrose mixture can be given by Levine tube since it is liquid. If the patient is nauseated, 50 per cent glucose may be given in distilled water through a polyethylene catheter threaded through the femoral vein into the inferior vena cava, or 25 per cent glucose may be given into a peripheral vein, the amount to be determined by the patient's daily fluid requirement. Fluids are limited to 600 cc. plus the volume loss through the kidney or from the gastrointestinal tract. No salt or alkali is given except to replace intestinal losses. The idea that cast formation can be prevented by the early administration of alkalies has been completely discarded. Potassium, acid salts, and diuretics are *harmful* and should never be used. One does not try to correct the abnormal blood chemistry findings other than potassium elevation. Transfusions are avoided unless the hemoglobin falls below 6 grams; then only packed red cells should be given, or else pulmonary edema may be precipitated.

Potassium-absorbing resins have been used effectively by some by giving them from the very first day, but in our experience the patient is usually too nauseated to take them. They are not nearly so effective when given by rectum. Temporary relief from potassium intoxication may be obtained by the use of 50 per cent glucose and insulin or by calcium gluconate administration. Gastric suction is helpful for a while and peritoneal lavage is even more effective. A ureteral catheter is introduced through a paracentesis needle into one side of the abdomen and about 2000 cc. of the dialyzing fluid introduced. After this a catheter is placed in the opposite side of the abdomen and the fluid drip is adjusted to the output.

Antibiotics are given to the patient and peritonitis will not usually result if the patient is not treated for longer than thirteen hours.

A safer and more effective procedure is dialysis by the artificial kidney. If urine flow is still less than 500 cc. a day and the blood potassium is as high as 7 mEq./L., dialysis should be used. Those with great experience in the field are convinced that some deaths can be prevented by using the kidney routinely after the seventh to tenth day of oliguria with no sign of diuresis. It is not uncommon to have a sudden death in the presence of a normal potassium after the seventh to tenth day.

Salt loss in the diuretic phase or postanuric phase has been overemphasized, and no harm is done by withholding salt a little too long. Much harm can be done by giving salt during the first few days of the postanuric period when at times 3000 to 4000 cc. of water may be passed with relatively little sodium chloride in it.

Salt administration at this time may result in acute pulmonary edema, as may transfusions. Salt administration should be limited to that which is lost in the urine, and transfusions and alkalies should be delayed a week or more if possible.

Too rapid administration of alkali may raise the carbon dioxide combining power before the calcium returns to normal and tetany may be precipitated because of reduction in the amount of ionized calcium.

In patients with bilateral cortical necrosis sodium and chloride excretion may begin early in the diuretic phase and replacement may be necessary at this time. While low blood potassium may occur during the diuretic phase it seldom becomes of any clinical significance and it is seldom necessary to give potassium before diet can be started. Some multivitamin preparations should be given throughout the course of the illness.

———o———

AN EVALUATION OF RADIOACTIVE IODINE (131) THERAPEUSIS IN THYROTOXICOSIS*

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T. BLOCH, M. D.
J. HIDALGO, M. Sc.
R. NIESET, Ph. D.
NEW ORLEANS

In the past four years we have adopted standards for the measurement of radioactivity in the human thyroid gland [1] and have used this technique for the measurement of radioactivity in the gland after a given tracer dose of iodine ^{131} to indicate the differential uptake in various states of thyroid function [2]. These studies have since been extended to the treatment of the hyperactive thyroid gland, carcinoma of the thyroid gland, and to the treatment of various types of heart disease. It is the purpose of this report to analyze our results in the treatment of thyrotoxicosis in private and clinic cases at Touro Infirmary.

The most difficult problem is that of therapeutic dose level. The objective is to achieve a state of euthyroidism with a single administered dose if possible. A great deal of uncertainty as to therapeutic dose is evidenced in the literature—some workers use multiple small doses, others large doses. The factors which influence the effect of a given dose are many, including varied susceptibility of the thyroid tissue to irradiation, lack of complete correlation between tracer dose retention and treatment dose retention in the gland [5], the effective half life of radioactivity in the gland, the rate of thyroidal turnover of radioactive material and the anatomic state of the gland (diffuse versus nodular) [3]. Seed and Jaffe [5] state rather succinctly that "it is wise to give the minimum effective dose in a young patient without much thyroid enlargement, add a few millicuries in an elderly patient, add a few more if the symptoms are severe, double the dose if the heart is badly damaged, subtract a millicurie or two if the patient is already overweight and add a couple if the patient lives out of town or if the patient's doctor is dubious of the value of treatment. In nodular toxic goitre, one may as well start with 20 millicuries and add 10 more if the gland is large." We chose to follow the suggestion of McCullagh and Richards [3] which embodied the administration of 4 millicuries for a normal size gland and increase of the dose by 1 millicurie for each additional estimated 10 grams of gland. This meant the administration of 6 to 8 millicuries in glands one and one half to twice normal size. Cases of recurrent hyperthyroidism presented a peculiar problem. When thyroid tissue was palpable, approximately 4 millicuries were given. When there was no palpable thyroid tissue, 2 to 10 millicuries were given depending on the urgency of the situation.

The treatment does not require routine hospitalization, but we prefer hospitalization for two or three days until most of the radioactive urine excretion has taken place. In general, the beneficial effects of irradiation in reducing toxicity are not ap-

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parent until some six to eight weeks have passed. During this time many patients are placed on sedation and antithyroid drugs. Marked reduction in gland size is uniformly noted except in large nodular goitre associated with fibrosis and calcification. For the first and subsequent tracer studies all antithyroid medication is discontinued five or more days prior to study. Unless this is done, blockage of iodine uptake occurs. In the case of stable iodine, the gland may be blocked for three or more months except in very toxic cases. Pretreatment uptakes are done on all treated patients. Post-treatment uptakes are done routinely two months after the first and subsequent treatment doses.

A total of 97 cases of hyperthyroidism were treated; of these, 11 cases were immediately rejected as unsuitable for thorough statistical analysis. The reasons for rejection of these 11 cases include questionable toxicity, poor follow-up, inadequate time elapsed since treatment, and private cases reported elsewhere. Accordingly, 86 cases were reviewed statistically. Fifty-five cases were personally handled; an evaluation of the remaining cases referred back to their doctors was obtained by discussing the patients with the referring physician. The evaluation, in toto, represents the opinions of many doctors. These toxic cases were classified as follows: diffuse toxic (67 cases), diffuse toxic—postsurgical (11 cases), nodular toxic (6 cases) and nodular toxic—postsurgical (2 cases).

Table 1 summarizes our results. Hyperthyroidism was overcome in 74 cases (86 per cent). Of these, 61 cases became euthyroid directly and 3 cases exhibited temporary hypothyroidism reverting to euthyroidism without therapy. A direct euthyroid state was obtained in 64 cases (74 per cent). Eleven cases required maintenance therapy on desiccated thyroid to obtain a euthyroid state (13 per cent). Twelve cases (14 per cent) failed to achieve a euthyroid state. These cases include an early death from arteriosclerotic and hypertensive heart disease, 1 death in thyroid storm twenty-four hours after treatment, 6 cases with insufficient time elapsed since treatment to completely evaluate them, 3 cases still toxic refusing further treatment and 1 case of hypothyroidism refusing desiccated thyroid therapy. At this point, failure in treatment is something which may occur because the therapist's hands are tied. The method itself does not admit to the possibility of failure to overcome hyperthyroidism.

TABLE 1

RETURNED TO EUTHYROID STATE	74 CASES (86%)
Primary euthyroid	61
Temporary hypothyroid *	3
Permanent hypothyroid †	10
NOT RETURNED TO EUTHYROID STATE	12 CASES (14%)
Interim death	2
Too early to evaluate	6
Still toxic	3
Permanent hypothyroid	1

* Spontaneously became euthyroid
† Required dessicated thyroid therapy

An evaluation of the 74 cases that became euthyroid is indicated (Table 2).

TABLE 2

GENERAL DATA
74 EUTHYROID CASES

		%	No.
Sex	Female	80	59
	Male	20	15
Age (Years)	0 — 20	3	2
	20 — 40	34	25
	40 +	63	47
Diffuse gland		91	67
Nodular gland		9	7
Exophthalmos		36	27
Post-surgical		16	12

Figure 1 shows the distribution of pretreatment iodine ^{131} uptake of a tracer dose in these cases. It indicates that there is a bell-shaped distribution of uptake in the toxic range with 93 per cent of the cases showing an uptake greater than 45 per cent. Whereas it might be expected that even in the toxic level greater toxicity would be reflected in increased uptake, this was not always the case in view of the fact that greatest clinical toxicity did not necessarily indicate greatest iodine uptake.

Figure 2 indicates the number of treatments required to return the patients to

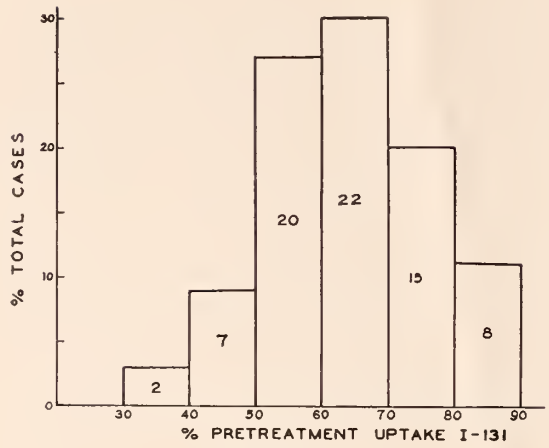


Figure 1

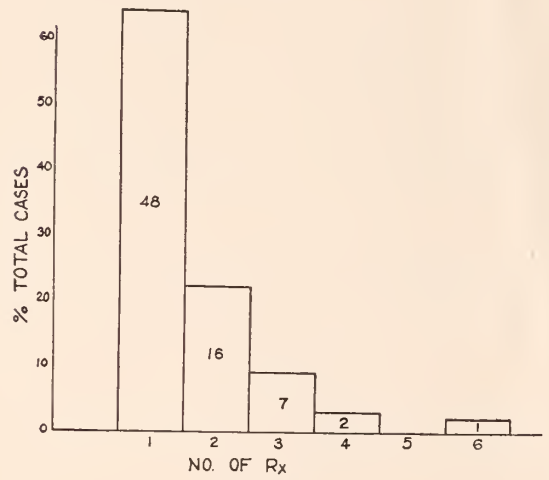


Figure 2

the euthyroid state. Sixty-four per cent (48 cases) required one treatment; 22 per cent (16 cases) required two treatments and 14 per cent (10 cases) required three or more treatments to return to the euthyroid state. It is our clinical impression that patients showing greater clinical toxicity require more treatment and seem to require a longer period of treatment to reach the euthyroid state.

Figure 3 shows the distribution of the total therapeutic dose; the range was 2 to 22 millicuries with an average of 9 millicuries; 75 per cent of the cases required 10 or less millicuries. The duration of treatment (Figure 4) ranged from two to twenty-six months; 65 per cent (49 cases) became euthyroid in two months, 11 per cent required four months, 7 per cent required six months, 8 per cent required eight months, 7 per cent required ten months, 2 per cent required twenty-six months. Thus, 77 per cent of the cases achieved the euthyroid state within four months after treatment was started. The duration of the follow-up ranged from two to forty-four months, the cases being somewhat evenly distributed during this period. The average follow-up period was seventeen months.

Elsewhere[2] we classified uptakes of radioactive iodine in four groups: low (0 to 10 per cent), normal (11 to 39 per cent), borderline (40 to 44 per cent, in which two thirds of the cases prove toxic), and high (45 plus per cent, in which almost all of the cases prove toxic). Post-treatment studies were obtained on 53 post-treatment euthyroid cases. In this

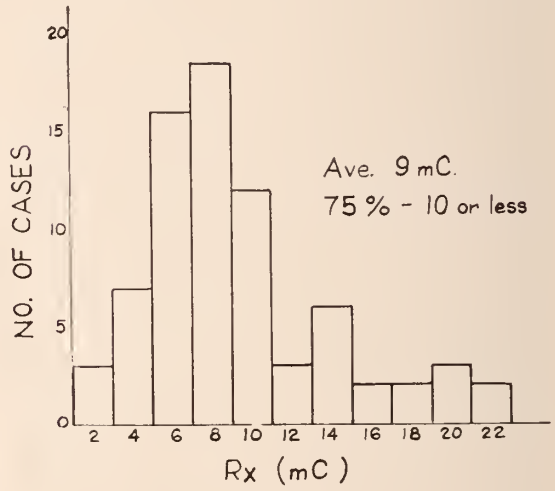


Figure 3

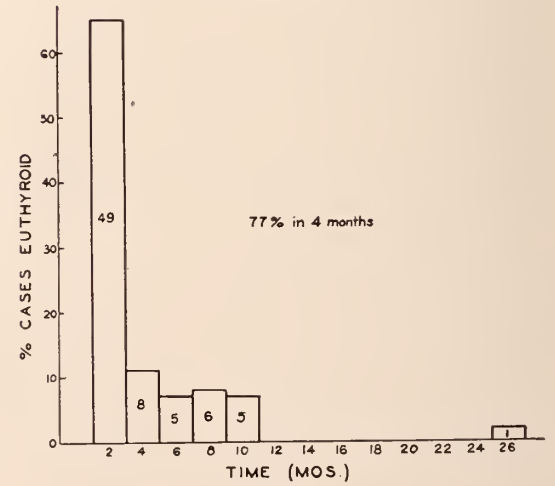


Figure 4

group (Table 3) we found low uptakes in 10 cases. Clinical euthyroidism is com-

TABLE 3

POST TREATMENT UPTAKE		%	No.
EUTHYROID — 53 CASES			
Low uptake	0 — 10%	19	10
Normal uptake	11 — 39%	62	33
High uptake	45 + %	17	9
Normal — Then high uptake		2	1
HYPOTHYROID — 8 CASES			
Low uptake	0 — 10%	100	8

patible with a low uptake. While more than half the cases showed normal uptakes, a considerable number (17 per cent) had persistent toxic level uptakes in the absence of hyperthyroid symptoms. In one instance a previously normal uptake reached a toxic level while the patient was still euthyroid. It may be surmised that future, longer observations may reveal a rebound in all of these groups to somewhat higher uptake levels; conversely, drops in uptake level may occur [14] as we have observed in one instance.

Following treatment, two cases developed exophthalmos which was readily controlled with desiccated thyroid. Four cases have become pregnant which can hardly be attributed to the therapy. Complete statistics are not available on gland size after treatment. In the 55 cases adequately followed, the gland size was reduced to normal in all but one—a large, calcified, nodular goitre. There was no pre-treatment medication in 71 per cent of the cases, 23 per cent had had antithyroid drugs and 6 per cent had taken iodides; 12 cases had previous surgery.

Table 4 indicates the breakdown of our data according to clinical classification of the glands. Reference is made to this table in the discussion.

An evaluation of the 11 cases (13 per cent) that became hypothyroid is indicated in Table 5. Hypothyroidism oc-

TABLE 5

HYPOTHYROID CASES (11) — 13%		
Diffuse glands	Non-surgical	10
	Post-surgical	1
Average No. Rx		1
Average follow-up		22 MOS.
Average Rx dose		6.6 MCS.
Average Pre-Rx uptake		65%
Average Post-Rx uptake		< 10%

curred only in cases of diffuse toxic glands, one of which had previous surgery. The initial size of the gland was normal in 4 cases, twice normal in 6 cases and in 1 it was not palpable due to prior surgery. The dose given averaged 6.6 millicuries. The surprising fact that appeared was that all of the cases of hypothyroidism received only *one* treatment dose. The average pre-treatment uptake was 65 per cent. The post-treatment uptake was less than 10 per cent in all cases.

An important consideration is the role that antecedent treatment with antithyroid drugs may play in altering radioactive iodine uptake. There seems to be some evidence that the treatment of euthyroid patients with antithyroid drugs followed by withdrawal of the drug for five or more days may lead to abnormally elevated radioactive iodine uptakes. Our data cannot answer this question with reference to euthyroid patients, but they do indicate that previous use of antithyroid drugs does not alter the up-

TABLE 4

		DIFFUSE TOXIC SIZE		DIFFUSE TOXIC POST-SURG.	NODULAR TOXIC	NODULAR TOXIC POST-SURG.
Palpable		0	2+			
Cases		26	41	11	6	2
Ave. Pre-Rx uptake		63	63	57	73	50
One treatment	%	66	66	87	66	0
Ave. Rx dose	MC.	6.8	9.8	6	12	16
Hypothyroid	%	17	18	9	0	0
Euthyroid	%	69	71	91	84	100
Discarded	No.	4	6	0	1	0

take in toxic patients (Figure 5). Fifty-eight cases did not receive pre-uptake

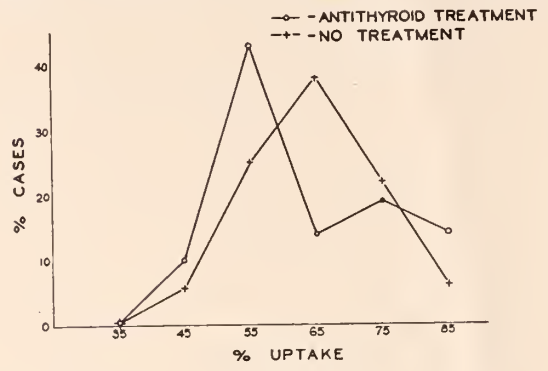


Figure 5

antithyroid drugs; 21 cases received such drugs. All cases taking iodine were excluded from the study. The mean uptake for the 58 cases not receiving antithyroid drugs was 63.9 per cent with a standard deviation of 10.1. The mean uptake for the 21 cases on antithyroid drugs was 63.6 per cent with a standard deviation of 12.5. Unfortunately, all but one of the nodular glands was in the group that did not receive antithyroid drug.

An attempt was made to correlate pre-treatment uptake with the dose necessary to induce the euthyroid state. The data plotted in the scattergram (Figure 6) in-

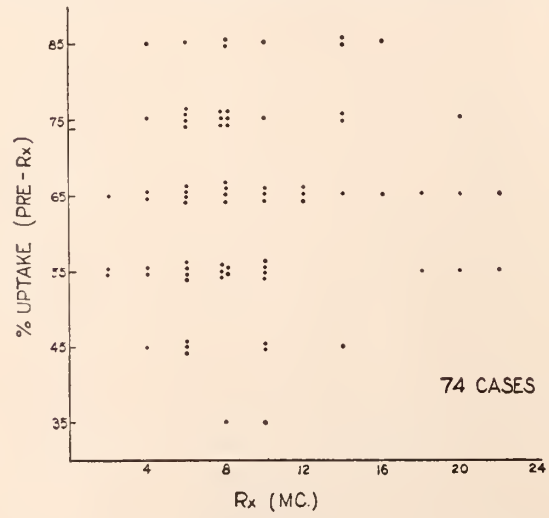


Figure 6

dicate the lack of straight line relationship.

Contrary to most of the reports in the literature, we could not elicit complaints of a local or general nature in patients given doses for the treatment of hyperthyroidism. Soley, Miller and Foreman [4] reported fairly frequent tenderness in the thyroid region within twenty-four to seventy-two hours after iodine ^{131} had been given, especially when 2 millicuries or more were given in a single dose. Complaints of a "lump in the throat, a sense of constriction in the neck or mild difficulty in swallowing" may be heard from four to six weeks after treatment [5]. In our experience, we rarely encountered such signs or symptoms but this may only mean that they were not looked for with sufficient care. We are well acquainted with these very signs and symptoms in patients receiving large doses, 20 or more millicuries, in the treatment of heart disease or cancer of the thyroid.

DISCUSSION

An attempt made to analyze the four clinical groups of thyroid cases enumerated above from the standpoint of pre-treatment uptake, average number of treatments, etc., was not valid because of the small size of the toxic nodular group. From the data available on the diffuse toxic group it would appear that the size of the gland has no bearing on pretreatment or post-treatment uptake or on the incidence of post-treatment hypothyroidism. As expected, increased gland size necessitated increased treatment dose to attain the same result. As pointed out above, the division of our cases into diffuse and nodular glands does not permit us to evaluate the differences between these groups. A general survey of the literature [5] indicates that satisfactory remission occurs in 80 per cent of both types of glands as compared to 86 per cent remission in our series.

The incidence of hypothyroidism subsequent to treatment of diffuse glands varies widely, ranging from 9 per cent to 19 per cent [5] and even as high as 25 per cent. [6] McCullagh and Richards [3] treated 78 cases of toxic nodular goitre without producing hypothyroidism while Scott et al [6] found an incidence of only 3 per cent in the treatment of toxic nodular goitre. These data indicate that the

actual incidence of hypothyroidism in any mixed series may depend upon the relative proportion of diffuse and nodular glands treated. Our incidence of hypothyroidism was 13 per cent in a series having a ratio of diffuse to nodular of 10 to 1. The over-all incidence in the literature for both types of glands is about 9 per cent. It should be emphasized that all of our cases that became hypothyroid were diffuse glands. We noted that there appears to be little opportunity for decreasing this incidence by present methods. All cases of hypothyroidism in our series received but *one* treatment. The average treatment dose for these cases was 6.6 millicuries while the average treatment dose to produce euthyroidism in the diffuse gland series as a whole was 8.8 millicuries. We therefore, cannot assign hypothyroidism encountered to the use of unduly large doses.

In a review of 942 thyrotoxic cases treated with antithyroid drugs followed by thyroidectomy, Bartels [7] reported an incidence of 7.3 per cent postoperative myxedema with 5.2 per cent permanent myxedema. These figures are essentially the same as those obtained when the preoperative preparation was iodides. The series contained the ratio of diffuse to nodular glands of approximately 4 to 1. The clinical toxicity, duration of disease, amount of goitre tissue removed and duration of antithyroid therapy had no relationship to the development of myxedema. It occurred about five times more frequently in diffuse hyperthyroid cases as in adenomatous goitre with hyperthyroidism. Excessive lymphocytic infiltration and fibrosis (strumitis) was six times more frequent in glands of patients who developed myxedema. In the surgery of Grave's disease conservative procedures yield about 5 per cent hypothyroidism whereas radical surgery yields about 20 per cent; the corresponding figures for the two types of surgery in nodular goitre are about 2 and 4 per cent. While it is possible that repeated small doses with radioactive iodine may decrease the incidence of hypothyroidism, some cases preclude such a method because of the urgency in obtaining relief by treatment. The two month intervals between multiple treatment with coincidental time loss, expense, etc., may mitigate against such a procedure.

The aim of treatment is to achieve a euthyroid state with one treatment; our data show 88 per cent euthyroidism with two treatments. The average dose to produce euthyroidism was 9 millicuries for both types of glands and 8.6 millicuries for diffuse glands. Nodular glands require about twice this dose. It is apparent from Table 3 that there may be lack of correlation between the clinical status of the patient and the post-treatment uptake of radioactive iodine. Of 53 clinically euthyroid patients only 62 per cent had uptakes in the euthyroid range.

The effect of treatment with radioactive iodine on exophthalmos is apparently no different from the effect produced by thyroidectomy. Measurement fails to reveal significant alteration in proptosis [4, 8]; exophthalmos may be aggravated or appear for the first time following treatment as occurred in two of our cases.

It is our impression that radioactive iodine therapy is the procedure of choice at this time in the treatment of primary hyperthyroidism. Several authors [9-12] have raised the question of the possible development of postirradiation malignancy. Thus far, no reports of such an occurrence have appeared in the literature—which is strange indeed. While the incidence of carcinoma is low in primary hyperthyroidism (2 cases in Bartels series of some 700 cases), sooner or later such a case will be treated with iodine ^{131} to later blossom out as a full-fledged malignancy. It does not seen unreasonable that some controversy will arise as to whether the malignancy was extant prior to or caused by the irradiation. Quimby and Werner [12] polled seventy radiologists and thirty thyroid specialists with reference to the incidence of post x-ray irradiation malignancy. No significant incidence of malignancy attributable to irradiation was found. They calculated that the hazard

associated with radioactive iodine therapy was no greater than with x-ray. Some hesitancy may be felt about going ahead with treatment which does not allow for examination of the tissue for possible malignancy. It is cogent, therefore, that some reliable figures be available in order to estimate the risk of treating patients with radioactive iodine.

Sokal [13] has recently critically analyzed American statistics on the incidence of malignancy in toxic goitre. He concludes that thyroid cancer arises more frequently in toxic than in nontoxic goitre, albeit the risk is small. The incidence of cancer in toxic nodular goitres is about 1 per cent; the incidence in diffuse goitre is even less. Some series give even lower figures than these. The risk of overlooking malignancy is small enough to warrant the use of radioactive iodine in all toxic cases.

To date there is no clear evidence that routine therapy has any significant effect upon the reproductive organs or their function. Four of our cases have become pregnant since treatment and 2 have already delivered normal children. Only one case of temporary hypoparathyroidism has been reported in the literature [15].

CONCLUSIONS AND SUMMARY

1. Eighty-six cases of hyperthyroidism treated with radioactive I^{131} are statistically studied and reviewed.

2. A euthyroid or hypothyroid state may be achieved in any case of hyperthyroidism depending on the dose of radioactive iodine used.

3. Pretreatment uptake studies indicate that 93 per cent of the toxic cases have an uptake higher than 45 per cent; clinical toxicity does not necessarily parallel uptake value in the toxic range.

4. The majority of patients require one treatment to achieve the euthyroid state; patients with greater clinical toxicity seem to require a larger number of treatments over a longer period of time.

5. The majority of cases require less than 10 millicuries and less than four months to achieve the euthyroid state.

6. The majority of post-treatment euthyroid cases show normal uptake; some lie above and others below these figures.

7. It would appear that almost all glands are reduced to a nonpalpable state by treatment with radioactive iodine.

8. All cases developing assumed permanent hypothyroidism in this study received only one treatment of radioactive iodine.

9. The incidence of hypothyroidism in our series approximates that in the literature, and is somewhat higher than that in surgically treated cases.

10. The prior use of antithyroid drugs does not alter the uptake of radioactive iodine in toxic cases provided the use of such drugs is stopped four or more days before the test is done.

11. There is no correlation between the pretreatment uptake and the dose of radioactive iodine necessary to induce the euthyroid state.

12. Radioactive iodine appears to be the treatment of choice in hyperthyroidism.

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THE RELATIONSHIP BETWEEN THE STATE MENTAL HOSPITAL AND THE GENERAL PRACTITIONER *

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This paper discusses the inter-relationship between the state mental hospitals and the general practitioners in Louisiana as perceived by a state hospital staff member. The degree of association between the two differs from state to state according to many variable factors such as the number of state mental hospitals and out-patient clinics, the area and population of the state, the number and distribution of general practitioners and psychiatrists, and the statutory provisions governing commitments and separations from the hospitals.

Louisiana has a total area of 48,523 square miles and a population of over two and one half million. This area and population is served by only three state mental hospitals, each receiving its patients from a certain specified and legislated boundary. It can be readily seen that a relatively large area supplies patients to each of the state hospitals. In these large areas there are more general practitioners than any other type of medical consultant. Consequently, it is they who first see the potential state hospital patient, and form the first line of defense against mental illness. Furthermore, under the laws of Louisiana, the coroner and another physician, both frequently general practitioners, have the responsibility of initiating commitment to the state hospital with final approval by the court in all cases except emergency commitments.

In many states psychiatric out-patient clinics screen admissions to state mental hospitals and follow the progress of separated patients. In other states with a limited number of out-patient clinics the general practitioner performs this function to a limited degree during the course of his practice, resulting in a more direct state mental hospital-general practitioner relationship.

It is interesting to note that Louisiana was one of the earliest states to establish a state mental hospital with the establishment of the East Louisiana State Hospital at Jackson in 1847. In 1850, there were only fifteen state mental hospitals extant in the country. Since then they have grown rapidly and today there are over two hundred, housing approximately 475,000 patients. The rapid growth did not always reflect an increasing interest in the welfare of the mentally ill. Unfortunately, all too often, it represented an attitude of "out of sight, out of mind." Mental illness disturbed the equanimity of the public, and usually the basic desire was to remove these social irritants from the public eye. Fortunately, in the last decade the emphasis has shifted more and more toward treatment and away from mere custodial care and detention.

The number one problem of state hospitals throughout the country is overcrowding. This problem has existed in Louisiana for many years, but in recent years there has been considerable improvement. For example, in 1946, the state mental hospitals were 57 per cent overcrowded; in 1948, this had dropped to 49 per cent; and in 1949, to 38.5 per cent. Many obvious methods have been proposed to relieve this situation; e.g., the establishment of new prolonged care units, temporary care hospitals, private mental hospitals, more mental health clinics, and an increasing emphasis on prevention. A neglected consideration is the role the general practitioner plays in relieving state hospital congestion by treating, himself, many minor psychiatric disorders, carefully selecting hospital commitments and by channelling potential state hospital patients into other appropriate public

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care agencies, e.g., nursing homes, mental health clinics, V. A. hospitals, etc.

During the fiscal year 1952-1953, there were approximately 2,500 total and 1,863 first admissions to the three state hospitals; Central, East Louisiana and Southeast Louisiana Hospitals. A careful evaluation of the admission statistics reveals a certain number of admissions which possibly could have been avoided, and I want to emphasize the term "possibly" as final statistics frequently do not reveal the original situation in its totality.

Table 1 presents a diagnostic breakdown of total and first admissions to the state mental hospitals during the fiscal year 1952-1953. For comparison a diagnostic breakdown of all first admissions to the majority of U. S. state mental hospitals is included.

From the table it is seen, as expected, that our largest group of first and total admissions is schizophrenic reaction, approximately 34 per cent. This figure is larger than the national average of 25 per cent first admissions due in part to the fact that our statistics are based on two prolonged care and one acute treatment hospital. Could any of these admissions have been avoided? Probably not, but there are two subgroups falling in these categories which deserve further mention. One group is those pregnant women who become psychotic in the last two trimesters of pregnancy. They should be sent to the neuropsychiatric units of

TABLE 1

TOTAL ADMISSIONS AND FIRST ADMISSIONS TO THREE STATE HOSPITALS DURING FISCAL YEAR 1952-1953 AND FIRST ADMISSIONS—NATIONAL AVERAGE ALL STATE MENTAL HOSPITALS

	1952 - 1953		1951
	Total Adm. in La.	First Adm. in La.	First Adm. in U. S. State Mental Hosp.*
Psychotic Disorders, Psychogenic or Without Clearly Tangible Cause or Structural Change			
Schizophrenic Reactions	34.40	33.70	24.60
Manic Depressive Reaction	7.00	4.30	4.38
Involutional Psychotic Reaction	2.88	3.00	4.60
Total	44.28	41.00	33.58
Diseases of the Senium			
Senile Brain Disease	4.19	5.30	11.60
Cerebral Arteriosclerosis	10.00	11.30	15.70
Total	14.19	16.60	27.30
Alcoholic Disorders			
Acute Brain Syndrome Assoc. with Alc. Intox.	3.21	3.60	
Chronic Brain Syndrome Assoc. with Alc. Intox.	2.93	3.40	
Sociopathic Personality Disturbance Assoc. with Alc. Addiction	5.82	4.30	
Total	11.96	11.30	12.30
Mental Deficiency	7.00	7.10	3.40
Undiagnosed Cases	5.16	1.80	3.20
Central Nervous System Syphilis			
Meningoencephalitic Syphilis	1.58	1.70	2.36
Other C. N. S. Syphilis	1.42	1.70	.47
Total	3.00	3.40	2.83
Psychoneurosis	2.88	3.50	4.75
Chronic Convulsive States	2.30	2.20	1.80
Personality Disorders, Antisocial Reaction	1.18	1.01	2.30
Other Conditions	8.05	12.09	8.54
Grand Total	100.00	100.00	100.00

* 188 out of 201 U. S. State Mental Hospitals.

the large charity hospitals whenever possible if unable to pay for private psychiatric care. Residency in an overcrowded state hospital on an open ward with many unpredictable patients places them in a hazardous situation with a possibility of being injured. The second group is the psychotic veteran with the service connected disability. There is rarely an instance when he has to be committed to a state hospital. According to recent information made available from the V. A. contact office in Baton Rouge, the V. A. hospitals will provide admission within twenty-four hours for those veterans with service connected disabilities who need emergency hospitalization for a psychosis. The V. A. advises that the attending physician contact his local V. A. office during the day; if he is unable to locate the officer in charge, he should then call the nearest V. A. Hospital collect. If the need for hospitalization arises at night, they recommend that the attending physician call the nearest V. A. hospital which would serve his particular case. White males only are accepted at Gulfport, Mississippi; females are accepted at the V. A. hospital at Tuscaloosa, Alabama; and colored males are accepted at the V. A. hospital in Tuskegee, Alabama. In the event of an extreme emergency, all service connected veterans may be referred to the V. A. hospital in New Orleans and that hospital will transfer the patient to the proper hospital.

The next largest group for consideration are those patients with diseases of the senium which comprise approximately 16.6 per cent of our first admissions and approximately 14.2 per cent of total admissions. This percentage is considerably lower than the national average, again reflecting the statistical compilation and other factors. It is obvious that most of these patients with diseases of the senium have to be hospitalized immediately as usually the family waits until they can no longer manage the patient before asking for medical care. There is a group of borderline cases among these aged, however, where the patient may show only mild evidence of organic brain disease such as confusion, disorientation, irritability, or a mild behavioral reaction. These patients should be carefully considered before commitment is contemplated, for several reasons. Available statistics show an unusually high mortality rate of these patients with disease of aging admitted to state hospitals. In 1948, the mortality rate within the first year was approximately 42 per cent of all patients admitted with diseases of the senium. The mortality rate in Louisiana for diseases of the senium, however, was considerably less than the national average—approximately 29 per cent within the first year. This shockingly high mortality rate occurs despite the fact that the physical condition of many of these patients was good or average at the time of admission. It is speculated that the high death rate reflects the inability of the aged person to adjust to an entirely new environment due to a limited reactive capacity. He becomes worried and anxious due to the demands of adjustment, which taxes him physically and causes him more mental concern, eventually creating a vicious cycle detrimental to both his physical and mental health. It is very probable that an aged patient on the verge of delirium will be precipitated into the delirium merely by the actual procedure of commitment and subsequent change of environment.

The question naturally arises, if we do not commit these borderline cases, what can we do with them? Recent advances in the pharmacalogical treatment of these cases using metrazol, nicotinic acid, cytochrome C, or a combination of these, has shown such promising results that an empirical trial is indicated before final commitment is decided upon. Sol Levy of Seattle, Chesrow and co-workers, Swenson and Grimes, and others have reported favorably on the oral use of metrazol. Levy reported a series of 30 cases treated with metrazol and nicotinic acid in an elixir. Daily dosage was metrazol, grains three t.i.d., and nicotinic acid, 100 milligrams t.i.d. He found that 70 per

information concerning commitment procedures, (2) the status of the patient on furlough or parole, (3) the names and addresses of approved nursing homes and mental health clinics, and (4) the common facts that the average family wants to know about the hospital when commitment is contemplated. The information could be made available through the coroners or the Department of Institutions. It is felt that this information, available at the fingertips of any committing physician, would help to establish rapport between the family and the physician. It could be the deciding factor in influencing agreement to civil commitment rather than to have the commitment enforced by public authorities with strained relations between the family, the general practitioner, and public authorities.

From the foregoing it can be readily seen that there is a constant and continued association between the general practitioner and the state mental hospital. The relationship does not stop with completion of commitment but continues throughout the patient's residency in the hospital and after he is separated.

The paper has also discussed possible alternatives in the handling of certain potential state hospital cases. I want to emphasize that it is not to be construed as a critical evaluation of the general practitioner's management of psychiatric disorders. The purpose of the paper is an attempt to contribute to some small degree towards a better mutual understanding between the two parties with the patient as the ultimate beneficiary.

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SURGICAL ASPECTS OF MECKEL'S DIVERTICULUM *

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Although Meckel's diverticulum is present in 2.0 [1] per cent of all individuals, it is only of surgical significance when one of its serious complications develops. It is the purpose of this paper to present twelve cases of Meckel's diverticulum that have been seen by the author between 1948 and 1954.

As early as 1672, Levator [2] reported a diverticulum of the terminal ileum; Ruysch, [3] in 1707, published the first illustration of a Meckel's diverticulum, but J. F. Meckel, [4] in 1812, first accurately described the anomaly and associated it with other congenital defects.

Zenker, [5] in 1861, found aberrant tissue in its wall; Deetz, [6] in 1907, found gastric mucosa in its wall and Deneke [7] associated this gastric mucosa with bleeding from ulceration.

ETIOLOGY

Meckel's diverticulum results from incomplete obliteration of the vitelline duct early in fetal life. The intestine connects with the yolk sac by a wide communication. At the fifth week it gradually begins to narrow down and close off. Failure of complete closure may result in a variety of anomalies. Thompson [8] classifies these as shown in Figure 1.

If no closure occurs, the entire duct may remain open resulting in a fecal fistula

* Presented at the Seventy-fourth Annual Meeting of the Louisiana State Medical Society, May 22, 1954, in New Orleans.

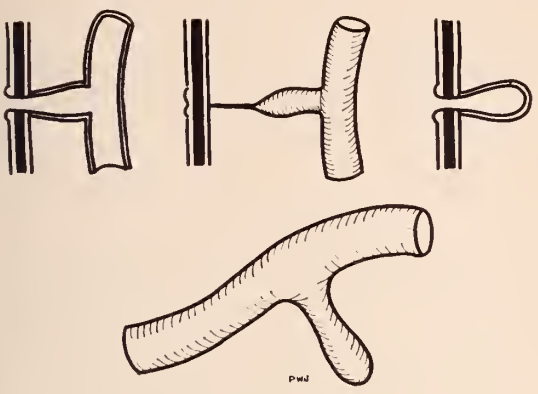


Figure 1

Upper left—Umblical type 6%
Upper center—Fibrous band connecting Meckel's diverticulum with umblicus 10%
Upper right—Blind pouch at umblicus 0.5%
Lower center—Typical Meckel's diverticulum seen in 82.5%

between the midgut and the umbilicus (6 per cent).

The distal end may close and leave a fibrous band connecting the midgut outpouching with the abdominal wall (10 per cent).

If the distal end remains patent a segment of mucosa is left at the umbilicus which secretes but does not connect with the intestinal lumen (0.5 per cent).

If both the proximal and distal ends close, an enterocystoma results (0.5 per cent).

If only the proximal segment remains open a blind pouch communicating with the lumen of the ileum results (82.5 per cent), known as a Meckel's diverticulum.

ANATOMY

The diverticulum has all of the coats of the intestine and usually arises from the antimesenteric border of the small intestine. It may have its own mesentery which connects it with the small bowel mesentery where it gets its blood supply.

The distance between the outpouching and the ileocecal valve has been found to be from 15 to 100 cm. The diverticulum may be from 0.1 to 10 cm. in length, usually of slightly less diameter than the ileum to which it connects, but one case [9] has been reported over 100 cm. long.

The lining of the diverticulum is the same as the ileum usually but heterotopic tissues are found in about 25 per cent [10] of the cases. Pancreatic, duodenal, gastric [5, 10-14] and colonic [15] tissue have been found in the sac wall. Of these, gastric ectopic tissue is the most important because of its ability to form peptic ulcers.

Free hydrochloric acid [16] and pepsin have been found within the lumen and are identical with that produced by the peptic ulcers in the upper intestinal tract. The ulcer is not in the patch of gastric cells but is usually in the mucosa of the ileum at its junction with the ectopic tissue.

CLASSIFICATION

Greenblatt's [17] classification divides these into the peptic ulcer group, the obstructive group, the diverticular group, the umbilical group, the tumor group and the incidental group. (Table 1).

TABLE 1
GREENBLATT'S CLASSIFICATION

I. Peptic group	III. Diverticular group
II. Obstructive	
A. Intussusception	IV. Umblical group
B. Volvulus	
C. Littre's hernia	V. Tumor group
D. Bands and adhesions	VI. Incidental group

PEPTIC ULCER GROUP

Peptic ulcer with hemorrhage or perforation is a frequent complication of early childhood. Rectal bleeding of often large quantities either bright red, partly clotted to tarry or chocolate colored stools has been seen. (Figure 2).

These children have pain at or near the umbilicus and will draw up their legs and cry when the cramp occurs.

OBSTRUCTIVE GROUP

The obstruction may be brought about by intussusception [18] of the diverticulum due to the relatively wide mouth of the sac which allows invagination of the sac into the ileum.

A volvulus of the intestine around the fixed diverticulum or obstruction of other loops of bowel beneath the fibrous remains of the yolk stalk may occur.

Obstruction may result from incarceration of a Meckel's diverticulum in an um-

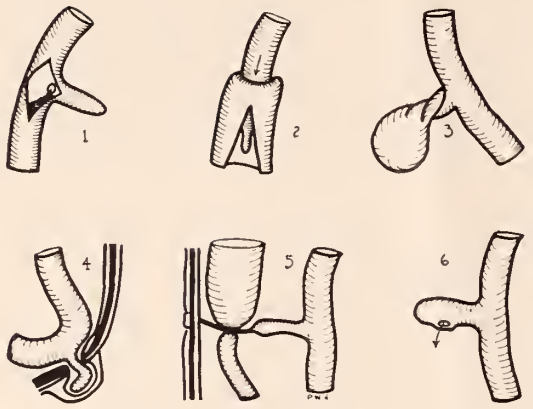


Figure 2

1. Bleeding peptic ulcer in diverticulum.
2. Intussusception of Meckel's diverticulum.
3. Volvulus of Meckel's diverticulum.
4. A Littre's hernia.
5. Obstruction of gut beneath fibrous band connected to Meckel's diverticulum.
6. Perforation of an acutely inflamed Meckel's diverticulum.

bilical, inguinal, or femoral hernia. These are called Littre's hernias.[19]

The pain is usually generalized, occurs in waves which increase in intensity and then subside only to recur again in several minutes.

DIVERTICULAR GROUP

The inflammatory process is similar to that of appendicitis and is indistinguishable from appendicitis preoperatively.

Acute diverticulitis is perhaps not more often found because the contents of the small bowel are liquid and can pass readily in and out of these wide mouthed outpouchings. Whether the process is acute or chronic, perforation with peritonitis is a serious complication. The inflamed diverticulum may adhere to other organs or intestine causing a pivot point for a volvulus or an obstruction of other involved gut which may strangulate through the opening.

UMBILICAL GROUP

Open lesions at the umbilicus are easily recognized at birth and can be diagnosed by the injection of radiopaque material into the fistula which is seen to connect with the intestine. This differentiates it from a patent urachus which communicates with the urinary bladder.

TUMOR GROUP

Either benign lesions such as enterocystoma, carcinoid, adenoma or mesodermal tumors or malignant lesions such as carcinoma or sarcoma have been reported[20].

INCIDENTAL GROUP

The incidental group includes those diverticula which produce no distinguishing symptoms and are found incidentally. The pain in this group is often dull, vague, and of chronic nature. Interference with normal peristalsis of the ileum is thought by some to cause the pain.

Table 2 shows the percentage of the complications observed in 1605 cases reviewed by Moses[21] in 1947.

TABLE 2
COMPLICATIONS IN 1605 CASES OF MECKEL'S DIVERTICULUM

	Number of Cases	Percentage
Hemorrhage	496	30.9
Intestinal obstruction	383	23.8
Perforation	222	13.8
Littre's hernia	188	11.7
Simple diverticulitis	165	10.3
Umblical fistula	36	2.2
Foreign body	32	2.0
Umblical polyp	28	1.8
Cancer	24	1.5
Others	31	1.9

DIAGNOSIS

Unless an umbilical type is present a definite diagnosis of Meckel's diverticulum cannot be made preoperatively. Bleeding from the rectum in the first three decades of life should make one strongly suspicious of an ulcerated Meckel's diverticulum.

The bleeding may be profuse with sudden onset or it may be intermittent and slight. The blood is usually dark rather than bright red or tarry and clots are often present.

Obstruction from Meckel's diverticulum has no cardinal diagnostic features and does not differ from obstruction from other causes.

X-ray demonstration of a Meckel's diverticulum is quite rare. Mottram[22] and Garland, in 1945, collected only 21 cases found by x-ray. If serial films of the

barium as it passes through the small bowel are taken, a higher incidence will be expected to be found. However, most investigators have discarded x-ray studies as a method of diagnosis.

At surgery, Jay[23] has recommended that at least the terminal 5 feet of ileum be examined for Meckel's diverticulum because 28 per cent lie more than 36 inches from the ileocecal valve.

Search for Meckel's diverticulum is necessary in all cases where intestinal bleeding has been a symptom or when the anticipated lesion is not encountered during laparotomy.

TREATMENT

The treatment of this lesion is surgical excision. It is unwise to invaginate the sac because of the possibility of gastric mucosa being present in the base with subsequent hemorrhage or perforation. Also inversion of the stump by purse string suture may encroach upon the small bowel circumference producing an intestinal obstruction.

We have used an Allen anastomosis forcep placed transversely across the base of the incidental diverticulum with inversion of the stump using catgut suture reinforced with cotton sutures. In these cases which were bleeding or acutely inflamed or obstructed, small bowel resection with end-to-end anastomosis is by far the safest method of management.

CASE REPORTS

Case No. 1. A sixty year old white carman was admitted to the hospital October 12, 1949, complaining of bleeding from the rectum. The patient had been well until the day prior to admission when he developed a "sluggish" feeling which was followed by a "drowsy" one resulting in extreme fatigue. On the evening of his admission he had a normal bowel movement about 3:30 P.M. At 5:30 P.M. he felt bloated and had a desire to defecate and upon stooling he noticed a large amount of bright red blood intermingled with dark red blood clots. Following this he became quite dizzy and almost fainted. He ate a big supper which he promptly vomited. He gave no history of previous melena and to his knowledge had no rectal trouble. His bowel movements had been entirely normal except for an occasional pain in his lower left abdominal quadrant which was relieved with milk of magnesia. His weight had remained stable and he felt normal until the day of admission.

Physical examination revealed a pale otherwise normal male of stated age. There was a generalized lower abdominal discomfort increased by deep pressure over the colon, particularly the sigmoid. No localized tenderness was found. There was a slight increase in tympany over the lower abdominal quadrants. Rectal examination revealed a good sphincter muscle tone. No external hemorrhoids or fissures were found. No tumor masses were palpable. Dark blood was seen grossly on the examining finger. The prostate gland was normal.

Proctosigmoidoscopic examination October 13, 1949, failed to demonstrate any bleeding point in the lower 13 inches of bowel. Blood was seen coming from higher up the bowel into the scope.

Upper and lower gastrointestinal series of roentgenograms were negative for any ulcerations, tumors, or disease processes, on October 14, 1949.

Because this patient continued to bleed profusely from his bowel in spite of blood transfusions for two days and in view of negative stomach and colon x-rays, it was felt that the most likely source of bleeding was a Meckel's diverticulum.

On October 15, 1949, the abdomen was opened through a right paramedian incision. A Meckel's diverticulum was found approximately 10 cm. from the ileocecal valve which measured 5 cm. in length. Contained within its lumen and the ileum distal to it and the entire colon and rectum, was a large amount of recent and old blood. There was no acute serosal inflammation but near the base of the diverticulum, an indurated, thickened area was noted, evidence of mucosal ulceration. The appendix was normal.

The diverticulum was resected and the stump closed in the usual manner. An incidental appendectomy was performed.

Postoperatively, on the ninth day the patient developed a pulmonary infarct which responded to anticoagulant therapy.

He was dismissed from the hospital on the thirty ninth day postoperatively.

Pathological report: Meckel's diverticulum with chronic inflammation. Appendix, histological.

Case No. 2. A ten year old white boy was admitted to the hospital February 7, 1954. He began passing red blood per rectum February 4, 1954, at home and continued to bleed in large quantities. Some of the blood was clotted, dark in color but also bright red. (He had no abdominal pain, diarrhea, abnormal stools, fever or other bleeding tendencies.)

Physical examination on admission revealed the skin and mucous membrane to be pale but no petechiae were found. The heart and lungs were normal. Abdominal examination was negative for palpable masses, tenderness or herniae. The liver and spleen were not palpable. No anal lesions were felt.

Sigmoidoscopy revealed blood coated rectal mucosa but no active bleeding site was found.

On admission the blood count was hemoglobin 7.0 gms., red blood count 2.69 million, white blood cells 5,650 with 2 stabs, 62 segments, 33 lymphocytes, and 3 monocytes. Hematocrit was 21. Bleeding time was 3'00", clotting time 4'50", and platelet count 74,000.

This patient had three tarry stools February 8, 1954, and it was felt that his hemorrhage was coming from the upper gastrointestinal tract.

In spite of blood replacement this boy continued to bleed. On February 10, 1954, at 2:30 A.M., he had a severe hemorrhage, his pulse was 130 and he vomited clear fluid. A diagnosis of bleeding Meckel's diverticulum was made and the patient was taken to surgery. Under general anesthesia a short right paramedian incision was made and the abdomen was explored. A large, distended, tense Meckel's diverticulum 7 cm. in length, which had a hemorrhagic change in its distal end, was found approximately 30 cm. from the ileocecal valve. The small bowel contained dark blood. A clamp was placed transversely across the base of the diverticulum and it was excised. The opening in the ileum was then sutured with an inner layer of 000 chromic catgut and an outer layer of 000 cotton. The abdomen was then closed in layers. The patient was given 500 cc. of whole blood during surgery.

Postoperative recovery was satisfactory. The patient went home on the sixth postoperative day.

Pathological diagnosis: (1) Meckel's diverticulum, (2) Meckel's diverticulum, ectopic gastric mucosa, and (3) Meckel's diverticulum, ulcer, chronic, active, with erosion of blood vessel and hemorrhage.

Case No. 3. A thirty six year old white woman, seven months pregnant, was admitted to the Obstetrical Service, October 13, 1953, with a diagnosis of acute gastroenteritis. Abdominal cramps began October 12, 1953, were mild in character and caused upper abdominal discomfort. No uterine contractions were found on admission. Her estimated date of confinement was December 3, 1953. Her previous laboratory work had revealed negative serology and Rh positive blood.

An appendectomy had been performed three years previously.

On October 16, 1953, vomiting of dark brown material began and pink vaginal discharge appeared. Her abdomen was distended, definitely larger than on admission, tympanitic above the uterus and bulging in the flanks. No perstaltic sounds were heard and she was tender in her lower right uterus.

X-ray of abdomen made October 16, 1953, revealed several loops of small bowel in the upper abdomen with moderate distention but without complete obstruction. It was believed to be in the jejunum and secondary to the pregnancy.

Surgical consultation was obtained, Wangensteen suction was started on a Levin tube and all feedings by mouth were stopped.

On October 17, 1953, labor began and at 9:30 P.M. a vaginal delivery was completed under saddle block anesthesia.

After delivery the patient's abdomen remained quiet for thirty-six hours then cramping abdominal pain began again. X-ray of the abdomen on October 19, 1953, revealed an increase in the abdominal gaseous distention with numerous fluid levels demonstrated.

At 7:30 P.M. on October 19, 1953, this patient was explored because of small bowel obstruction.

Under spinal and sodium pentothal anesthesia, the abdomen was opened through a short right paramedian incision. Numerous loops of dilated small bowel were seen. Approximately 20 cm. from the ileocecal valve there was a Meckel's diverticulum 5 cm. long which was acutely inflamed and plastered with an exudate to the fundus of the uterus and right broad ligament. The ileum attached to the Meckel's diverticulum was markedly edematous and partially twisted upon itself to produce a nearly complete obstruction. The bowel distal to the diverticulum was collapsed.

While freeing the diverticulum from the uterus and broad ligament, the diverticulum was torn at its base and a small amount of spillage of the contents of the bowel lumen resulted.

The Meckel's diverticulum and associated segment of small bowel were removed and an end-to-end anastomosis of the resected gut performed, using a continuous "baseball" stitch of 000 chromic catgut reinforced with an outer layer of interrupted cotton serosal sutures. The defect in the mesentery was closed, the abdomen was closed in layers without drainage.

Peritonitis with ileus resulted postoperatively with a wound infection. All responded to massive antibiotic therapy, fluid replacement and gastric suction.

Gradual improvement resulted and the patient was allowed to go home on the nineteenth postoperative day.

Pathological report: Meckel's diverticulum, diverticulitis, acute and chronic.

Case No. 4. A sixty seven year old white woman was admitted to the hospital February 15, 1950, complaining of left lower abdominal quadrant pain, nausea and vomiting, fever and no bowel movement for four days' duration. The onset of pain she described as "feeling like a whirlwind looks". The pain increased in intensity, nausea and repeated vomiting resulted with increasing lower abdominal colicky pain.

She was admitted to the hospital with fever 101° F. and a leukocytosis of 12,900 with 85 per cent polymorphonuclear leukocytes and a negative urine examination.

X-rays of the abdomen showed a small bowel obstruction with gas filled loops of small intestine.

(1) Small bowel obstruction, (2) diverticulitis, and (3) appendicitis, acute, were the three preoperative diagnoses considered.

On February 15, 1950, after correcting her fluid imbalance she was taken to the operating room, given a spinal anesthetic and a midline incision was made.

A gangrenous Meckel's diverticulum approximately 6 cm. long and 15 cm. from the ileocecal valve was adhered to the posterior wall of the uterus. The loop of small intestine, attached to the Meckel's diverticulum had twisted upon itself producing a strangulation. Proximal to the volvulus, the bowel was markedly distended.

Resection of 20 cm. of gut containing the gangrenous diverticulum was performed with end-to-end anastomosis of the bowel in the usual manner. The appendix was also removed in a routine manner.

Postoperative recovery was quite satisfactory and she was dismissed from the hospital on the eighth postoperative day.

Pathological report: (1) Hemorrhagic necrosis of the ileum; (2) acute Meckel's diverticulitis; and (3) obliterated appendix.

Case No. 5. A forty eight year old white housewife was admitted to the Gynecological Service on February 8, 1954, because her gynecologist suspected a carcinomatous uterus.

She had been bleeding off and on for several months and her menstrual flow had been excessively heavy.

At the age of eight, a tumor of the small intestine along with 4 inches of intestine had been removed. When seventeen years old she had an intestinal obstruction requiring surgery.

Physical examination on admission revealed an old right lower quadrant scar and an old well healed midline scar. On pelvic examination, the uterus was enlarged about 18 to 20 cm., was irregular in outline, movable and only slightly tender. The remainder of her examination was negative except for a 9.7 gm. hemoglobin and 4.03 million red blood cells.

This patient was transfused with 500 cc. of whole blood on February 8, 1954, and again on February 9, 1954, which raised her hemoglobin to 12.9 gm. and 5.25 million red blood cells.

On February 10, 1954, after a dilation and curettage was done, the abdomen was opened through the midline suprapublic scar.

The small intestine was firmly adherent in the right lower quadrant and a hard mass was felt in the small bowel in the lower abdomen.

I was called in surgical consultation and while scrubbing, the large myomatous uterus was removed along with the cervix, tubes, and ovaries by the gynecologist.

The adhesions were freed from the small intestine involved in the hard mass and a large diverticulum found which contained a fecalith. This segment of bowel containing the sac had been excluded from the gastrointestinal tract by a proximal side-to-side anastomosis of the jejunum.

The diverticulum was removed transversely and closure of the small bowel performed in a routine manner using an inner layer of catgut and an outer layer of cotton.

Postoperative recovery was satisfactory, her Levin tube was removed on the fourth postoperative day and feedings started by mouth. She was dismissed on the eleventh postoperative day.

Examination of the diverticulum revealed its measurements to be 6 cm. long, 4 cm. in diameter at its distal end and 3 cm. in diameter in its proximal end. Contained within the lumen was a large fecalith which completely filled the distal lumen.

Microscopically, ectopic gastric mucosa was found in the lining of the diverticulum.

Case No. 6. A thirty year old fireman was admitted to the hospital on March 12, 1950, with abdominal pain, nausea and vomiting for three hours duration. The pain began in the epigastrium and then moved to the right lower quadrant. No history of genitourinary difficulty.

Physical examination revealed localized tenderness in the right lower quadrant of the abdomen increased on straight leg raising.

Laboratory examination revealed a negative urinalysis, a white blood count of 16,300 with 53 segmentals, 15 band forms, 1 juvenile, 28 lymphocytes, and 3 eosinophiles.

A diagnosis of acute appendicitis was made and the patient operated under spinal anesthesia. An acute inflammation was found in the appendix and in addition a Meckel's diverticulum, 60 cm. from the ileocecal valve. Appendectomy and diverticulectomy were performed in a routine manner. Postoperative recovery was satisfactory and he was dismissed on the seventh postoperative day.

Pathological report: Acute appendicitis plus a normal Meckel's diverticulum.

Case No. 7. A forty three year old Mexican laborer was admitted to the hospital complaining of recurrent attacks of gallbladder colic for fifteen months duration. A nonfunctioning gallbladder was found on two cholecystograms, therefore, the patient was operated upon on May 5, 1954. A gallbladder was found which contained several large stones. After removal of the gallbladder a 6 cm. long Meckel's diverticulum was found about 35 cm. from the ileocecal valve on the antimesenteric border.

The sac was removed transversely and the defect closed with a double layer of catgut reinforced with cotton.

Pathological report: (1) Cholecystitis with cholelithiasis, and (2) Meckel's diverticulum.

Postoperative recovery was satisfactory and the patient was dismissed on the twelfth postoperative day.

Case No. 8. A fifty four year old foreman was admitted to the hospital May 19, 1952, for removal

of a polyp of descending colon which had been found on previous colon x-ray examination.

He gave no history of melena or blood per rectum. Past surgery included an inguinal hernia repair on February 18, 1952, and hemorrhoidectomy March 7, 1952.

Physical examination was normal as was the laboratory work.

On May 26, 1952 under spinal anesthesia the abdomen was opened through a left rectus muscle splitting incision. Exploration of the abdominal viscera revealed a 2.5 cm. long Meckel's diverticulum in the small bowel 50 cm. from the ileocecal valve and a palpable polyp in the descending colon.

The Meckel's diverticulum was excised and the defect closed in two layers and a sleeve resection of the colon performed with end-to-end anastomosis, using two layer closure. Incidental appendectomy was performed.

Pathological diagnosis: (1) Colon, polyp, benign, (2) Meckel's diverticulum, and (3) appendix, histological.

Postoperative recovery was quite satisfactory and he was dismissed on the seventh postoperative day.

Case No. 9. A forty two year old white fireman was admitted to the hospital on February 21, 1950, for further studies of a colon polyp which was discovered on barium enema previously. The polyp was again seen on repeat barium enema, therefore, his colon was prepared for surgery.

Through a left rectus paramedian incision, the abdomen was opened. The polyp was found in the mid-descending colon and removed by wide excision. A 3.5 cm. Meckel's diverticulum was found incidentally, 50 cm. from the ileocecal valve, and was removed along with the appendix.

Pathological report: Meckel's diverticulum of ileum, histological appendix, and polyp of colon, benign.

Case No. 10. A twenty year old white messenger was admitted to the hospital October 26, 1948, complaining of abdominal pain for eight days. The pain was upper abdominal and cramping in nature at first and then became constant and shifted to the right lower quadrant. A diffuse tenderness over the entire abdomen was found with the tenderest area under the right costal margin. No abdominal masses were palpable and there was no rebound tenderness. On October 28, 1948, surgical consultation revealed bilateral rectal tenderness, right lower quadrant tenderness with rebound tenderness. The abdomen was opened and the appendix was found in a retrocecal position without any acute inflammation being evident. The appendix was removed in a routine manner. There was found a 3.0 cm. long Meckel's diverticulum, 60 cm. from the ileocecal valve, which was removed with closure of the ileum in a transverse manner.

Postoperative recovery was satisfactory and he was dismissed on the sixth postoperative day.

Pathological report: Appendix histological, Meckel's diverticulum.

Case No. 11. A thirty two year old electrician was admitted to the hospital December 2, 1953, complaining of abdominal pain for three days duration. His pain was sharp and colicky in his right lower abdomen. Nausea but no vomiting had resulted. Three previous attacks of similar pain with a diagnosis of appendicitis had been made one year previously.

Abdominal examination revealed moderate tenderness in the right lower quadrant but no rebound tenderness, a positive Rovsing's sign, right rectal tenderness, and audible bowel sounds.

A preoperative diagnosis of subacute appendicitis was made.

At surgery a normal appearing appendix was found which was removed. Search for Meckel's diverticulum revealed a small, wide mouthed sac approximately 2.5 cm. long and 80 cm. from the ileocecal valve. This diverticulum was removed transversely and closed with an inner layer of catgut and an outer layer of cotton.

Pathological report: Appendix, normal; Meckel's diverticulum without inflammation.

Postoperative recovery was satisfactory. The patient was dismissed on the thirteenth postoperative day.

Case No. 12. A thirty year old white welder was admitted to the hospital July 24, 1951, complaining of abdominal pain for four days. He first noticed aching cramping pain in the epigastrium and back. He took a laxative and the pain subsided. His local doctor examined him and made a diagnosis of acute appendicitis on evidence of right lower quadrant pain on pressure. He was sent to the hospital for an appendectomy.

Examination on admission revealed the abdomen to be flat, nontympanitic, and localized tenderness was found in the right lower quadrant without rebound tenderness.

On July 27, 1951, the abdomen was opened and a normal appendix was found and removed. Approximately 90 cm. from the ileocecal valve was a Meckel's diverticulum which had a broad base and was 3.0 cm. long. This was removed in the usual manner by clamping across its base transversely and closing the defect with catgut and cotton.

Pathological diagnosis: Histological appendix and Meckel's diverticulum. No inflammatory process was found in either specimen removed.

An uneventful recovery was made and the patient was dismissed on the seventh postoperative day.

DISCUSSION

The youngest patient was ten years old, the oldest was sixty seven years old. There were three females and nine males with an average age of fifty years and

thirty five years, respectively. The average age length of Meckel's diverticulum was 4.2 cm. The average distance from the ileocecal valve was 49.1 cm. All twelve cases had the sac arising from the antimesenteric border of the bowel.

Two cases were suspected of bleeding from a Meckel's diverticulum preoperatively, two cases had small bowel obstruction associated with the Meckel's diverticulum. The remaining 8 cases were found incidentally at surgery, associated with appendicitis in 4 cases, with colon polyps in 2 cases, with cholecystitis in 1 case, and with uterine myomas in 1 case.

One case had a fecalith in it and had apparently been acutely inflamed previously, since proximal shunt anastomosis had been done. Three of the 12 cases had ectopic gastric mucosa in the sacs. Two cases out of 12 required small bowel resection along with the diverticulectomy.

The average hospital stay was 12.2 days. Postoperative complications included a pulmonary infarction in Case No. 1, prolonging his hospital stay to thirty-nine days and peritonitis in Case No. 3 with secondary wound infection.

There were no operative deaths.

SUMMARY

1. Acute abdominal disease plus passage of blood per rectum, especially in children, should suggest a Meckel's diverticulum.

2. The etiology, anatomy, classification, pathological complications, and treatment are discussed.

3. When feasible, the terminal ileum should be routinely examined in every abdominal operative procedure and if a Meckel's diverticulum is found, it should be excised or an ileal resection done.

4. Twelve cases of Meckel's diverticulum are presented, 4 producing symptoms and 8 being found incidentally.

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INSULIN PREPARATIONS IN THE TREATMENT OF DIABETES MELLITUS *

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NEW ORLEANS

Because the inadequate methods of treating diabetes mellitus were responsible for the death of many patients before 1921, it was most necessary that Banting and Best's discovery of insulin be immediately utilized in the only available form at that time. In the past thirty-three years its physiological uses in the body have not changed, but the timing of its action has differed vastly from the original product because of various modifications, including a new type soon to be available in the United States.

Of the varying degrees of severity of diabetes mellitus only the categories of the severe diabetic and the diabetic with acute complications will be considered in this discussion, since only these groups need insulin treatment. About 50 per cent of diabetics can be treated by diet alone.

The type of insulin needed in the individual case must be chosen with some care. The physician must never allow himself to become habituated to the use

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of only one type of insulin. Acquaintance with characteristics of each type of insulin and with the proper indications for use of each type of insulin is essential to good modern management of diabetes.

INSULIN TYPES

Since timing of the various insulins now in common use is the only variable among the various preparations, this subject is most important. (Table 1) A

TABLE 1
CLASSIFICATION OF INSULINS

Quick acting, short duration
Regular Insulin
Semilente Insulin
Intermediate in action and duration
N.P.H. Insulin
Globin Insulin
Lente Insulin
Slow acting, long duration
Protamine Zinc Insulin
Ultralente Insulin

The timing of the peak action and duration of action is grouped into three groups.

quick-acting insulin of short duration is familiar to us all as unmodified, regular, or crystalline insulin. Less familiar to us in this country is a similar insulin developed in Denmark known as semilente insulin. We are also acquainted with the widely used intermediate insulins with a moderately long action which have an onset of action slower than the unmodified insulin. Globin, N.P.H., and now lente insulin, are examples of this type. Protamine zinc insulin and ultra-lente are long acting and slow in onset of action and they have less intense action at the peak.

INSULIN TIMING

A typical curve of action for each of the three categories of insulins when given subcutaneously to a fasting diabetic of moderate severity, who has had no insulin for at least three days and who has been maintained on a steady diabetic diet during that time, is presented in Figures 1, 2 and 3. The prompt fall in blood sugar of this individual with a peak action within three to six hours and a relatively short duration of effect of less than ten hours is well known (Fig. 1). The less intense, less prompt, but somewhat longer duration of the intermediate insulins makes them probably the most useful of all types of insulins (Fig. 2). Finally the long-action type of insulin has

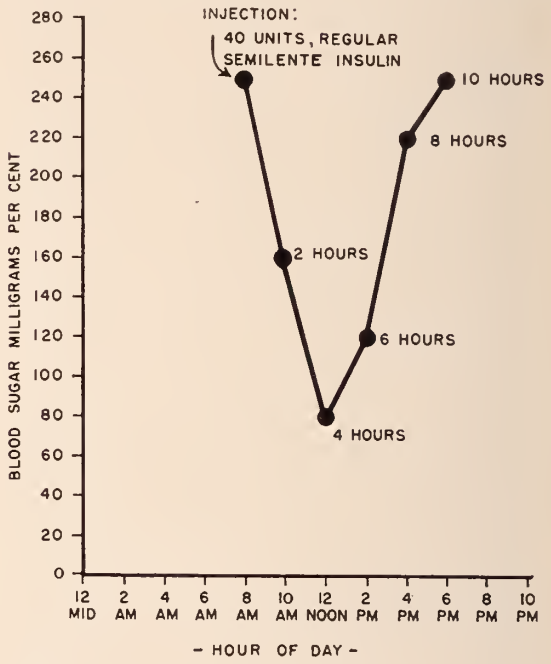


Figure 1. Average blood sugar curve following injection of a moderate dose of a quick acting insulin in a diabetic without previous insulin. The peak action occurs in four hours and the effect is gone in ten to twelve hours.

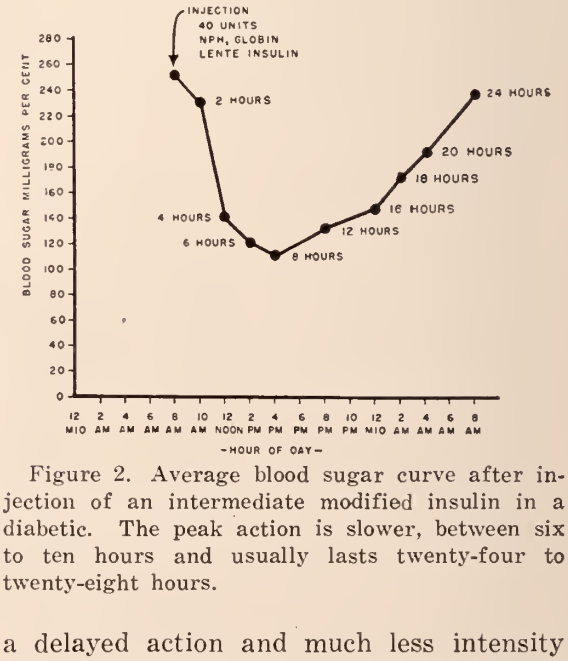


Figure 2. Average blood sugar curve after injection of an intermediate modified insulin in a diabetic. The peak action is slower, between six to ten hours and usually lasts twenty-four to twenty-eight hours.

a delayed action and much less intensity at its peak, since the insulin is released so slowly (Fig. 3).

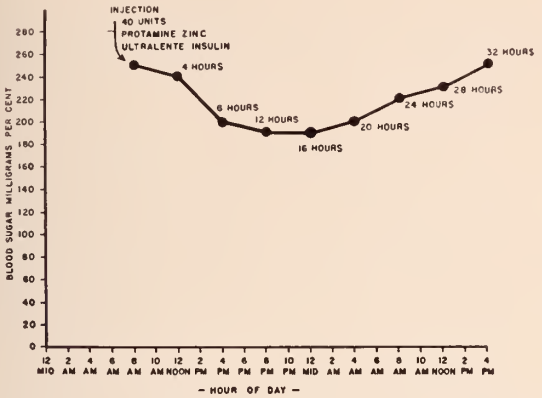


Figure 3. Average blood sugar curve after injection of a long-acting insulin. Here the peak action is less intense, and more prolonged. The duration of action may be as long as three days.

CHOICE OF INSULIN

A presentation of the proper time in the proper case to use each insulin would be the ideal of a dogmatic discussion of this subject. Diabetes must never be dogmatized or standardized, or we will make grave and often fatal errors of judgment.

MILD DIABETES

Of the mild cases of the diabetics who have the disease of sufficient severity to warrant insulin, a small single dose of a long-acting insulin or of an intermediate insulin is very satisfactory.

Since protamine zinc insulin is released slowly from its insoluble compound, there is some overlapping of doses. The full effect of a series of daily doses is not attained until after three days; thus, when beginning or terminating or changing the dose of this type of insulin it is necessary to judge the effect of one-third of the dose each day. After three daily injections, the level of insulin dose is fairly constant. The main time of peak action of protamine zinc insulin is between eighteen to twenty-four hours and thus there tends to be fasting hypoglycemia, especially with higher doses and less action to control postcibal hyperglycemia. These facts are not disturbing since, in the mild diabetic, there is little necessity for hour-to-hour control. It is advisable not to use protamine zinc insulin alone in doses higher than 40 units.

MODERATELY SEVERE DIABETES

The more severe diabetic who will probably not be controlled well with protamine zinc insulin should use a modified insulin, either protamine zinc mixed with regular in a ratio of two parts regular to one part of protamine zinc or faster acting and less prolonged mixtures using higher ratios, two and one-half or three of regular insulin to one part of protamine zinc insulin. N.P.H. and globin approximate the timing of a 2:1 mixture. A mixture of less than 2:1 ratio should not be used since it acts like protamine zinc insulin alone. These insulins control the moderate and heavy postcibal hyperglycemia when given before breakfast. Then, too, there is less tendency for any nocturnal hypoglycemia at high dosage, which can be dangerous. Dosage of these insulins is not limited, and varies from 10 units to doses as high as several hundred units, although often at such high doses a single injection may not be satisfactory.

SEVERE DIABETES

The severe diabetic, often a juvenile diabetic, is a special problem which must be studied carefully to determine the insulin requirement, especially as related to diet and exercise, since these may be very variable factors as difficult to control as the insulin dose. Glycosuria occurs frequently and unpredictably and insulin reactions occur without warning. Single doses, often high, of N.P.H., or globin insulin may be satisfactory. If there is nocturnal hypoglycemia with evening glycosuria, then switching to a single injection of a mixture of 2½ or 3:1 ratio of regular to protamine zinc insulin with faster peak action and a shorter duration usually controls these cases.

LABILE DIABETICS

Many labile (brittle) diabetics, however, are never controlled on a single insulin injection of any type. Usually the best technique here is to use two injections of a modified insulin daily. Injections of N.P.H. or globin, or a 2½ to 3:1 ratio of insulin given using two-thirds of the total dose before breakfast and one-third before the evening meal (about twelve hours later) will control almost

100 per cent of these people without much difficulty.

"LENTE" INSULINS

Before discussing emergency treatment with insulin, it would be well to mention the newly developed types of insulin. Since 1952, a group in Denmark [3] and then others in England have been using these insulins which differ from protamine and N.P.H. insulins in that an acetate buffer is used instead of a phosphate buffer. In using this buffer, crystalline insulin may be used without the need for adding protamine or other agents to prolong the insulin and make it insoluble. Ultra-lente is made of three times crystallized insulin and consists of insulin crystals which are slowly absorbed and produce a blood sugar curve similar to protamine zinc insulin. Semi-lente is also made of pure insulin crystals but precipitated in an amorphous physical state, thus rendering it easily and quickly absorbable, similar to our regular insulin. Lente insulin, the only kind to be marketed in this country, is a mixture of 30 per cent semi-lente and 70 per cent ultra-lente and has an action similar to N.P.H. and globin, with perhaps a slightly faster onset of peak action and slightly longer in duration. Eli Lilly and Co. will market this insulin, since it already has F.D.A. approval [2], some time this summer. These insulins are not miscible and cannot be used in combination with any of the other insulins now commercially available.

The advantages of lente insulin are several. First, there is no possibility of any allergy developing to it since there is no foreign protein in the insulin. Secondly, it has been found not to produce any local reaction or fat atrophy even when injected in the same area repeatedly. Finally, it has been found to provide control of some severe diabetics in a single dose better than a single dose of any other modified insulin. Disadvantages include the confusion that may exist to adding one more insulin preparation to the commercial market. Another disadvantage is that it may be misused and mixed with another type of insulin. It cannot, like other long-acting insulins, be used in the treatment of coma. Adequate publicity to the medical profession, however, should insure its proper and adequate use.

EMERGENCY TREATMENT OF ACUTE COMPLICATIONS

Acute illness, operations or trauma, and acidosis require emergency treatment. This discussion should not be considered adequate for the proper treatment of these complications since it will touch briefly only on the relation of insulin to these complications.

If the patient has been taking a usual dose of his depot insulin, it should be continued without varying the dose. In addition, the patient should be on the proper program of six-hour management with urine tests made on fresh urine, regular unmodified insulin given and a diet containing 40 grams of glucose or its equivalent given orally or parenterally every six hours as outlined originally by Woodyatt and refined by Colwell [1]. With this plan most complicated diabetes should be under control within twenty-four hours.

COMA

When the patient is in coma the initial dose of regular insulin should be larger (80 to 200 units), and often half or all of it should be given intravenously to insure proper absorption, even though the action, since insulin acts as an enzyme to promote glucose utilization, cannot be speeded much. Then subsequent doses can be judged by response at the end of three to six hours. If no lessening of dyspnea or vomiting (two most important signs in coma) is seen in four hours, the initial dose should at least be doubled and given again intravenously.

With return to consciousness and reduction of the total insulin requirement, depot insulins may be used to replace the regular insulin. These will be adequate when given in one dose to equal the total dose of the regular insulin. The patient at that time resumes his three-meal feeding.

SUMMARY

Insulin may be life saving and when used in the proper manner makes manag-

ing diabetics easier, less complicated, and far better for the patient as well as the physician.

Mild diabetics who cannot be controlled on diet alone may be give 10 to 40 units of protamine zinc, N.P.H. or globin insulin once daily before breakfast.

Moderately severe diabetics requiring more than 30 or 40 units of insulin can be controlled on larger doses of N.P.H. or globin insulin given once daily before breakfast.

Severe diabetics may be fairly well controlled on N.P.H. or globin once daily, although some will achieve better control with a mixture of 2½ or 3 parts of regular insulin to 1 part of protamine zinc insulin. This provides a faster peak of action and somewhat shorter duration of action to better control postcibal hyperglycemia and to avoid nocturnal hypoglycemia.

Labile diabetics often need two injection of N.P.H. or globin insulin each day, usually two-thirds of the total dose in the morning, and one-third twelve hours later.

Lente type insulins are described briefly and the advantages and disadvantages of the one new type of these insulins soon to be commercially available in the United States are outlined.

Emergency use of insulin in the treatment of diabetes complicated by acute illnesses, surgery or trauma, and coma is briefly presented. The six-hour managment scheme used by Colwell [1] is preferred as the simplest and the most effective way of controlling complicated diabetes. Regular insulin is used alone at regularly spaced intervals unless the patient has already been using a longer acting insulin in which case both are used.

Diabetes can never be treated in a standard, routine mechanized fashion, and the patient's response to treatment must be the ultimate guide to the physician.

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GALLSTONE OBSTRUCTION OF THE SMALL BOWEL

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The treatment of acute cholecystitis has undergone a radical change in the past fifteen years. From an attitude of conservative expectancy, we have adopted the more aggressive approach with removal of the gallbladder during the early acute phase. Similarly, the apparent benignancy of the "silent" gallstone has failed to stand up under careful scrutiny, and more and more, cholecystectomies are being done for so-called silent gallstones. This aggressive attitude should result in a lowering of the morbidity and mortality associated with gallstone ileus, a fairly uncommon but relatively lethal disease.

Intestinal obstruction due to gallstones was first described by Bartholin in 1654, and during the past fifteen years, many excellent papers have appeared on the subject. Walters and Snell in 1940 and Hand and Gilmore in 1943 reported an incidence of 2 per cent and 1.7 per cent, respectively, of gallstone ileus in cases of intestinal obstruction.

The usual sequence of events is an attack of acute cholecystitis occurring in a patient with gallstones, and resulting in ulceration of a stone or stones through the gallbladder, or rarely the common duct, into some portion of the intestinal tract, usually the duodenum. At the time of ulceration, massive hemorrhage into the intestinal tract may occur, and make itself evident by the vomiting of blood and/or passage of blood from the rectum. Obstruction of the small bowel may occur at any point along the intestinal tract because of a disparity between the size of the stone and the lumen of the bowel or because of induced spasm of the bowel. However, the most frequent site of obstruction is in the vicinity of the ileocecal valve because of the progressive diminution in the caliber of the bowel from the duodenojejunal flexure to the ileocecal valve. Most stones will be passed via the rectum without a complicating obstruction.

TABLE 1

Case No.	Age	Sex	Race	Admission Diagnosis	Duration Symptoms prior to Admission	Time from Admission to Operation	Operative Findings	Operative Procedure	Location of Stone	Prev. History G. B. Disease	Recent Acute Attack	Previous Jaundice	History of Bleeding	X-Ray Findings	Outcome	Autopsy or Subsequent Procedure
1. Touro R. B. 7/20/39–8/3	37	F	W	Intestinal obstruction	2 days	1 day	1 stone	Enterotomy	Lower ileum	1 year	1 year ago	No	No		Well	
2. Touro E. N. 5/11/40–5/26	45	F	W	Intestinal obstruction	5 days	1 day	1 stone	Enterotomy	Lower ileum	No	No	No	No		Well	
3. Touro H. K. 7/27/49–8/14	81	F	W	Intestinal obstruction	4 days	1 day	4 stones	Enterotomy		40 years	No	No	No	X	Well	
4. Touro C. R. 2/15/50–2/26	77	F	W	Intestinal obstruction	2 days	3 days	1 stone	Enterotomy	Lower ileum	No	5 months	No	No	X	Well	
5. Touro L. H. 8/6/51–8/15	70	F	W	Intestinal obstruction	7 days	same day	1 stone	Enterotomy	Ileum	No	3 months	No	No	X	Well	
6. Touro M. R. 2/2/51–2/4	76	F	W	Intestinal obstruction	7 days	same day	1 stone	Enterotomy	Ileum	No	No	No	No		Died	Myocardial infarction
7. Touro M. T. 10/28/43–11/24	52	F	W	Intestinal obstruction	Several days	2 days	1 stone	Enterotomy	Ileum	Yes	4 months	No	No	X	Well	
8. Touro LSL 10/24/46–11/21	52	F	W	Intestinal obstruction	12 hours	same day	1 stone	Enterotomy	Ileum	4 years	No	No	No		Well	
9. Touro E. L. 7/25/51–8/3	62	F	W	Intestinal obstruction	5 days	same day	1 stone	Enterotomy	Ileum	Yes	No	No	No	X	Well	
10. Charity C. G. 9/23/50–10/13	83	F	W	Intestinal obstruction (large bowel due to ca.)	7 days	1 day	1 stone	Enterotomy	Upper ileum	Stone seen in gall bladder 7 months ago	7 months ago	7 months ago	No		Well	
11. Charity MPC 12/21/51–1/3/52	78	F	W	Intestinal obstruction	1 month	2 days	1 stone	Enterotomy	Upper ileum	4 months	11/9/51 1 month	No	10/20/51 vomited blood tarry stools		Well	
12. Charity P. W. 11/12/48–1/12/49	61	F	C	Partial intestinal obstruction	3 weeks	17 days	2 stones	Enterotomy and Gastrotomy	Jejunum and Stomach	No	No	No	No	X	Well	
13. Charity MDJ 11/2/52–11/16	75	F	W	Intestinal obstruction	6 days	Same day	1 stone	Enterotomy	Terminal ileum	6 or 7 years	No	No	No		Died	Ca. of gall bladder with widespread carcinomatosis
14. Charity S. C. 3/6/43–3/6	71	F	C	Intestinal obstruction	6 days	Same day	1 stone	Enterotomy	Terminal ileum	No	No	No	No		Died	Perforation at junction of duodenum and jejunum
15. Charity O. H. 5/3/51–5/11	56	F	C	Intestinal obstruction	2 days	Same day	1 stone	Enterotomy	Jejunum	1 year	No	No	No		Well	9/10/53–operation Shrunken G.B. removed. No stones
16. Sara Mayo H.W. 11/18/52–11/26	45	F	W	Intestinal obstruction (Gall stone ileus)	7 days	Same day	1 stone	Enterotomy	Mid-Jejunum	6 months (Radio opaque stone in G. B.)	6 months	No	No	X	Well	
17. Sara Mayo G.B. 11/29/52–12/14	61	F	W	Intestinal obstruction (Gall stone ileus)	2 days	Same day	1 stone	Enterotomy	Mid-Jejunum	No	No	No	No	X	Well	

Wakefield, Vickers and Walters in a study of 152 cases of spontaneous cholecystenteric fistulas at the Mayo Clinic found about a 10 per cent incidence of gallstone ileus.

Obstruction of the small bowel from gallstones usually occurs in obese females past the age of sixty who present the triad of signs and symptoms associated with intestinal obstruction, viz., colicky pain, vomiting and obstipation. Once the x-ray evidence of intestinal obstruction is established, the need for surgery is imperative after a short preoperative interval for decompression, hydration, and the restoration of electrolyte balance. Differentiation between the intestinal obstruction from other causes and that from gallstone can be made with certainty only if: (1) Air or barium is demonstrated in the biliary tract. (2) A stone is visualized in the bowel. Or (3) A stone in the gallbladder region is no longer present there and is seen elsewhere in the abdominal cavity.

We have reviewed all the cases of gallstone ileus which have occurred during the past fifteen years in three New Orleans hospitals, Charity Hospital, Touro Infirmary and Sara Mayo Hospital, and the data are shown in Table 1.

Walter Becker reviewed 1007 cases of acute mechanical obstruction occurring at Charity Hospital in the ten year period 1940 through 1949. (Table 2)

TABLE 2
CHARITY HOSPITAL 1940-1950 (BECKER) [12]

1007 cases	—acute mechanical intestinal obstruction
412 cases	—due to adhesions
305 cases	—due to hernias
102 cases	—due to primary neoplasms
74 cases	—due to intussusception
57 cases	—due to volvulus
14 cases	—due to congenital malformations
14 cases	—due to obturator obstruction
10 cases	—carcinomatosis
5 cases	—Mesenteric thrombosis
5 cases	—Diverticulitis
5 cases	—Unknown
3 cases	—Extrinsic mass
1 case	—Meckel's

In breaking down the 14 cases of obturator obstruction referred to in Table 2, we found that only one of these (our Case No. 14) was due to gallstones. The others were cases of ascariasis or phytobezoars.

As can be noted in Table 1, positive x-ray findings were present in eight of the seventeen cases of gallstone ileus. (Table 3)

TABLE 3
X-RAY FINDINGS

Case 3.	1.	Possible gallstone in LLQ
	2.	Air in biliary tract
Case 4.	1.	Gallstone in RUQ five months ago
	2.	Gallstone now in RLQ
	3.	Gallstone in lumen of bowel
	4.	Air in biliary tract
	5.	Small bowel obstruction
Case 5.	1.	Calcified mass in pelvis
	2.	Questionable air in biliary tract
	3.	Small bowel obstruction
Case 7.	1.	Biliary fistula
	2.	Indirect evidence of stone
	3.	Small bowel obstruction
Case 9.	1.	Radio opaque gallstone in gall bladder
	2.	Radio opaque gallstone in small bowel
	3.	Air in gallbladder
	4.	Small bowel obstruction
Case 12.	1.	Barium in Miller-Abbott tube stopped at midjejunum
Case 16.	1.	Gallstone, radio opaque, seen in gallbladder six months ago, now absent.
	2.	Gallstone in bowel, left midabdomen
	3.	Air in biliary tract
	4.	Small bowel obstruction
Case 17.	1.	Air in biliary tract
	2.	Small bowel obstruction

The ages ranged from 37 to 83, with only three cases occurring in patients below the age of fifty. All were women. Three died. One was a seventy-six year old woman who had symptoms of intestinal obstruction for seven days prior to admission, and who died two days postoperatively of myocardial infarction. Another was a seventy-five year old white female who had had a known history of gallbladder disease for six or seven years, symptoms of intestinal obstruction six days prior to admission and surgery, and who exhibited wide-spread carcinomatosis (of gallbladder) at the time of operation, in addition to obstruction of the terminal ileum by a gallstone within the lumen. The third case was a seventy-one year old colored female with no previous his-

tory of gallbladder disease, but with symptoms of intestinal obstruction for six days prior to admission and surgery, and who was found at operation to have a perforation at the duodenojejunal flexure as well as an obstructing gallstone in the terminal ileum.

It is of interest to note that in all of the cases of proven gallstone ileus, the region of the gallbladder was poorly visualized at operation because of induration and adhesions. In no case was any attempt made to expose or deal with the cholecystenteric fistula at the original operation, and in only one case (Case No. 15) was it deemed necessary to re-explore the patient at a subsequent date. This was in a fifty-six year old colored female who continued to complain of fatty food intolerance, vague pains and soreness in the right upper quadrant. A second operation, performed two and one-half years after the initial enterotomy, revealed a mere nubbin of gallbladder to be present (with no stones) and with a fistulous opening present between the remnant of gallbladder and duodenum. The small portion of gallbladder was removed and the fistula into the duodenum closed. In retrospect, this was probably an unnecessary operation, and the benefit to the patient is still to be proved.

One patient, a seventy-eight year old white female, had been admitted three months before because of pain in the epigastrium and vomiting of three months duration. A diagnosis of multiple diverticulosis (large bowel) and hiatus hernia was made at this time. She was readmitted one month later with a history of vomiting blood and passing tarry stools. Additional diagnoses of nonfunctioning gallbladder, possible esophageal varices and hematemesis, cause undetermined, were made at this time. Two weeks after discharge, she was readmitted and operation revealed a gallstone in the upper ileum (flat plate was negative for stone) while exploration of the gallbladder region was indefinite.

Many of these cases demonstrated partial intestinal obstruction over a period of days or weeks which progressed to complete obstruction before surgical exploration was thought imperative. Had the possibility of gallstone ileus been entertained and a careful correlation of the patient's history made with the x-ray findings, the correct diagnosis might have been made earlier. The criteria for x-ray diagnosis are well known and consist of the following:

1. Presence of small bowel obstruction
2. Presence of air or barium in the biliary tract
3. Absence of a gallstone from its previously demonstrated position in the gallbladder.
4. Presence in the intestinal tract of a gallstone, as evidenced directly by its opacity, or indirectly with the aid of contrast media.

These findings are well demonstrated by the accompanying x-ray pictures, (Figure 1) taken in Case No. 4.

In dealing with radio opaque gallstones,



Figure 1. The arrow to the right of the vertebral column and above the tube points to air in the biliary tract. The arrow beneath the left end of the transverse colon points to a gallstone in the small bowel.



Figure 2. Radiopaque stone.



Figure 3. Stone removed from body and x-rayed. Dense central core is only part visualized when patient is x-rayed.

it would not be amiss to comment that only the central radio opaque portion is visualized directly on x-ray. This is illustrated in Figure 3.

In our opinion, the procedure of choice is a simple longitudinal enterotomy performed just proximal to the stone after the bowel contents have been milked proximally and the bowel lumen occluded with a rubber shod clamp. The bowel is closed transversely. A search should be made for other stones, since occasionally there are multiple calculi, especially if the original stone is facetted. No attempt should be made to deal with the cholecystenteric fistula at this time. It would appear from these and other reported cases that subsequent surgical intervention with the idea of removing the gallbladder and eliminating the fistula is rarely justified.

CONCLUSION

1. Awareness of the possibility of gallstone ileus in patients with small bowel obstruction will lead to earlier, more exact diagnoses.

2. Aggressive treatment of early acute cholecystitis and of silent gallstones should further reduce the incidence of gallstone ileus.

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TEACHING MODERN RHINOLOGY *

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During the past few years articles have appeared in the literature concerning otolaryngologic teaching and the future of this specialty. Practically all of the discussion has dealt with otology, laryngology, or broncho-esophagology. Rhinology is barely mentioned. There are reasons for this.

Until the early 1940's rhinological surgery consisted of the submucous resection, removal of polyps, and various degrees of sinus surgery.

During the past decade the complete septum operation, its reconstruction, and surgery of the external nasal pyramid has been added.

Up until this time practically all of the surgery performed on the external nose was on an anatomical basis. The conscientious rhinologist, who was interested and had enough money to obtain some of these procedures, soon found out that many of his patients were not getting a good functional result, so he abandoned this surgery. In fact, many of our specialty practically discontinued the septum operation. Actually dissatisfaction was so general that the public and many of the medical profession looked upon any nose operation with great disfavor.

There is now a renewed interest in this subject because of the newer concepts of nasal physiology so vividly described by Dr. M. H. Cottle.

Another reason why so little has been said about the teaching of modern rhinology, is that we have not had enough qualified teachers.

The answer to this is to instruct those individuals who are in teaching positions. Generally, this is the idea followed by Dr. Cottle. As of this date, he has given instruction to over sixty professors in twenty-five medical schools, including eleven heads of departments. Of course, there are many others. It is Dr. Cottle's opinion that this work cannot be learned in a one week, one month, or a six months course. Regardless of who you are, I dare say, it will take a minimum of five years of hard work, with frequent interchanging of ideas, detailed records, self discipline (including self analysis) and observation of many patients pre and post operative, before one can do this work with much satisfaction.

How is such a teaching program carried on? I shall briefly outline the one used by Dr. Cottle. In the past several years he has given his course twice a year—once in Chicago at the Illinois Masonic Hospital and once at another city. So far, it has been given in Salt Lake City, Shreveport, Denver, Colorado Springs, Hartford, Indianapolis (University of Indiana) and at Washington University in St. Louis. Besides this, there have been abbreviated instruction periods in Pittsburg, Rye, (New York), and recently at Yale University. This year it will be given at Johns Hopkins and next year at the University of Oregon Medical School, Portland, Oregon.

A few new students are invited to each course; along with them are others who have had the instruction before, from one, to as many as ten or more times. After two or three years, or four to six courses, one may become an instructor. It is the instructor's job to become a teacher and to help in the mechanics of the course. All instructors are requested to bring exhibits to each course. These show evidence of much work and study. Such an exhibition as seen at the last course in Chicago has never been equaled at any of the "big name" meetings.

The course is titled: INTRODUCTION TO FUNDAMENTALS OF RECONSTRUCTIVE SURGERY OF NASAL SEPTUM AND EXTERNAL NASAL PYRAMID. It consumes over one hundred hours in eight days, with another day optional. The class is divided into groups of 8-10. The last class having 6

* Presidential address before the Louisiana-Mississippi Ophthalmological and Otolaryngological Society, Edgewater Park, Mississippi, April 9-11, 1954.

groups—with each group 2 or 3 instructors are assigned.

It consists of: *Didactic Lectures:* (all groups). These are given by Dr. Cottle and include anatomy, physiology, operative procedures, and philosophy. Lantern slides, motion pictures and drawings are generally used.

Medical Seminar: (one group). These are given by past students (instructors). Material consists of reviewing the didactic lectures with a question and answer period.

Surgical Seminar: (one group). These are given by instructors. Material consists of setting up the operating room, preparation of patient, dressing, anesthesia, and a review of the use and care of instruments.

Observing Surgery: (four groups, Dr. Cottle operating; one group, instructors operating). Each two new observers are assigned a seat next to an instructor who keeps them oriented and sees that they get a good detailed record of the operation.

Assisting Surgery: Two new students assist Dr. Cottle and two second or third year students assist in Surgery #2, where one of the instructors is operating. These students are given the privilege of performing some of the procedures.

Observation of Patients: This includes seeing the patients the day before surgery, the day of surgery, the day after surgery, making rounds, the first dressing, and seeing many patients operated from one day to many years; also patients who have been re-operated. One has the experience of examining these patients and questioning them.

Cadaver Surgery: Two doctors work on each specimen, one new student along with one who has had the course previously. An instructor is assigned to each four men and he rotates each session so that there will be a better exchange of ideas. The cadaver surgery consists of operative procedures taught in the didactic lectures, medical seminars and at surgery. Each student gets to perform all procedures taught. I want to state here that no procedure is done unless a good reason can be given for its use.

Picture Analysis: Each day three operations are performed and the students receive four photographs of each patient. They are taught how to analyze these pictures and to correlate them with the surgery. They are also taught how to take photographs and are encouraged to take them personally.

Keeping Records: Each student is given a note book in which he keeps his pictures and notes. He is urged to keep detailed notes. At the end of the course Dr. Cottle goes over this book with him and gives his impression of the student's particular needs. For Dr. Cottle this is an all day experience.

During the course there is an official scribe who sees that an official record is kept of *all* happenings of the day.

A course such as this is an experience that one will never forget. After attending it for several times you become a part of it and it becomes a part of you. All agree that this cannot be done by one individual. This is made possible by the men Dr. Cottle has taught, and who, much like the disciples of Freud, have become a part of him.

Certainly, when more men have been trained in modern rhinological surgery (which really means "the preservation and restoration of nasal function") more references will be made to it in the literature.

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DIFFERENTIATION OF CARDIAC AND NON-CARDIAC CHEST PAIN

The necessity for the evaluation of chest pain presents itself to every physician. In recent years, because of the lengthening life span and because of our broadening knowledge of coronary disease, the need for differentiation of cardiac and non-cardiac chest pain has increased. The patient with a suggestive history and a negative resting electrocardiogram may or may not have heart disease. The physician must interpret symptoms in order to render adequate advice. In certain complicated situations heart disease may exist but chest pain may come from functional or other organic disease.

In a recent paper by Master, Jaffe, and Pordy,[1] a valuable statistical study of "diagnostic criteria" was presented which will assist the physician materially in this problem. A study was made of the histories of 200 consecutive private patients complaining of chest pain. Half of these had coronary disease with an abnormal resting electrocardiogram. The other half were considered free of heart disease because of a normal resting electrocardiogram and a negative double "two-step" test, and also, because none of these latter patients developed a coronary insufficiency or occlusion during a four year period of observation. Eighty of the non-cardiac cases suffered from some functional disturbance. In the majority, the diagnosis was neurosis, and the remainder, neurocirculatory asthenia, uncomplicated hypertension or hypotension, or paroxysmal arrhythmia. The remaining 20 patients were found to have arthritis, gallbladder disease, peptic ulcer, or hiatus hernia.

The chest pain was considered as to onset, location, type, radiation, duration, and relief by nitroglycerin. Many cases of anginal and functional pain were found to be atypical. Many cardiac patients did not exhibit any of the characteristic pain patterns. On the other hand, patients in the group having functional pain were found to have pain substernal in location, onset with effort, and relief by nitroglycerin. Chest pain has usually been regarded as cardiac in origin if "(1) it was induced by effort, (2) its location was substernal, (3) it was constricting or oppressive in type, (4) it radiated into the left shoulder or arm, (5) it was of short duration, (6) it was relieved by nitro glycerin." Non-cardiac chest pain has usually been considered as existing if "(1) it occurred at rest, (2) its location was in the left chest, (3) it was aching in quali-

1 Master, Arthur M., Jaffe, Harry L., and Pordy, Leon: Cardiac and non-cardiac chest pain: A statistical study of "diagnostic" criteria, Ann. Int. Med. 41:315 (Aug.) 1954.

CONGRESSIONAL MATTERS

C. J. Brown, M. D., Chairman; J. O. Weilbaecher, Jr., M. D.; both of New Orleans; T. B. Ayo, M. D., Raceland; J. E. Knighton, M. D., Shreveport; Marvin T. Green, M. D., Ruston; Arthur D. Long, M. D., Baton Rouge; T. H. DeLaureal, M. D., Lake Charles; R. E. C. Miller, M. D., Alexandria.

JOURNAL

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MATERNAL WELFARE

Isadore Dyer, M. D., Chairman, New Orleans. (Members to be appointed).

MEDICAL DEFENSE

C. B. Erickson, M. D., Chairman, Shreveport; J. Kelly Stone, M. D., New Orleans; W. A. Ellender, M. D., Houma.

MEDICAL EDUCATION

Edwin H. Lawson, M. D., Chairman; B. J. DeLaureal, M. D., P. H. Jones, M. D.; all of New Orleans.

MEDICAL TESTIMONY

Edmund Connely, M. D., Chairman; A. N. Sam Houston, M. D.; both of New Orleans; H. S. Coon, M. D., Monroe; Charles McVea, M. D., Baton Rouge; P. L. McCreary, M. D., Lake Charles.

PUBLIC POLICY AND LEGISLATION

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HOSPITALS

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LIAISON WITH LOUISIANA STATE NURSES' ASSOCIATION

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NEUROPSYCHIATRIC SERVICE AT CHARITY HOSPITALS

Edmund Connely, M. D., Chairman; P. H. Jones, M. D.; both of New Orleans; E. M. Robards, M. D., Jackson; Arthur L. Seale, M. D., Pineville.

NOMINATION OF COMMITTEES TO BE ELECTED AT 1955 ANNUAL MEETING
(To be appointed)

PUBLIC HEALTH OF THE STATE OF LOUISIANA

B. J. DeLaureal, M. D., Chairman; W. P. Gardiner, M. D.; both of New Orleans; E. C. Faulk, M. D., Rayne; F. P. Rizzo, M. D., Monroe; J. R. Romero, M. D., Welsh; J. J. Stagg, M. D., Eunice; G. Vasquez, M. D., Lake Charles; J. A. White, Jr., M. D., Alexandria.

PUBLIC RELATIONS COUNCIL

Walter Moss, M. D., Chairman, Lake Charles; Clarence E. Boyd, M. D., Shreveport; C. Grenes Cole, M. D.; W. Robyn Hardy, M. D.; both of New Orleans.

RURAL AND URBAN HEALTH

J. P. Sanders, M. D., Chairman, Shreveport; E. R. Guidry, M. D.; George H. Hauser, M. D.; both of New Orleans; Guy R. Jones, M. D., Lockport; W. Rigsby Hargrove, M. D., Oakdale; O. B. Owens, M. D., Alexandria; M. C. Wiginton, M. D., Hammond; C. T. Yancey, M. D., Monroe.

SECOND DISTRICT MEDICAL SOCIETY AND ORLEANS PARISH MEDICAL SOCIETY
(Investigation in re membership)

E. L. Leckert, M. D., Chairman; A. B. Cairns, M. D.; A. V. Friedrichs, M. D.; all of New Orleans; M. B. Casteix, M. D., Kenner.

STATE HOSPITAL POLICIES

George Wright, M. D., Chairman, Monroe; Wm. E. Barker, Jr., M. D., Plaquemine; L. O. Clark, M. D., Lafayette; P. H. Jones, M. D.; Charles B. Odom, M. D.; Edwin L. Zander, M. D.; all of New Orleans; F. J. MacPherson, M. D., Shreveport.

WOMAN'S AUXILIARY
(Advisory Committee)

M. C. Wiginton, M. D., Chairman, Hammond; C. Grenes Cole, M. D., New Orleans; Walter Moss, M. D., Lake Charles.

HEALTH COUNCIL MEETING

The Annual Meeting of the Louisiana Health Council will be held in Monroe on the 11th and 12th of November. Do not forget these dates. Sixteen or more organizations dealing with the promotion of health, health education and related subjects will be represented and we are sure you will be well compensated for your trip to Monroe.

Dr. H. E. Slusher, President, Missouri Farm Bureau Federation and a member of the National Council on Rural Health, and Mr. Aubrey D. Gates, well-known recognized authority and leader in this work, from the American Medical Association, will give addresses and we feel confident that they will bring messages which will be most worth while and informative.

More of our members should become members of this Health Council and join us in our fight to improve the health conditions of our school children and create a closer relationship with the respective groups which are sponsoring these projects, thereby achieving for our people better conditions of health and education which are so essential and contribute so much to the health and happiness of our people. This work should be directed by doctors who are better qualified and informed on health matters and should take the lead in this work. The public looks to us for leadership in all things medical, and we should not be found delinquent but should join our forces with other groups working in this field to make our State the envy of other States and to show to the people that the destiny of their children's health is always in good hands when entrusted to the doctors of this State.

Won't you please apply for membership in the Louisiana Health Council and keep our profession at the top of the list in this meritorious work?

PUBLIC RELATIONS MEETING

A meeting sponsored by the Department of Public Relations of the American Medical Association was held in Chicago September 1 and was attended by some 250 representatives from various states. It has come to the point, however, where a doctor of medicine is quite a rarity at these meetings as it seems to be the trend for this field of medicine to be taken over by full-time public relations men.

The great thing now in publicity is television and those present were shown several films which might be obtained if any of the TV stations in specific areas are interested.

It was reported at this meeting that the MARCH OF MEDICINE will be continued through 1955 and that the Dow Chemical Company is coming out with a new series of TV pictures which has to do with the practice of medicine.

It was strongly urged that each county society devote one meeting each year to public relations as it is thought that a new member properly indoctrinated will make a much more valuable member than if he is uninformed. This is done by having a meeting with the new members twice a year and having the sponsor of the new member present him to the membership and the new member presented with a folder containing material concerning the society activities and a personal letter of welcome.

There has been a new idea brought forward in the tape recordings of various health subjects and these are forwarded to the various high schools. It might be well to look into this with regard to future activity of the Council on Medical Service and Public Relations of our State Society.

The next point taken up was how to get doctors to medical meetings. It has been found that the larger the society, the poorer the attendance. The programs are usually bad and a business meeting in conjunction with a scientific program usually holds the attendance down. It is found that the

best way to get the doctors out to a meeting is adequate notification of the meeting, having a central meeting place where the doctors can park their cars. If a meeting is held concurrently with a meeting of the Woman's Auxiliary, the attendance at the medical society meeting will increase notably and the best attendance is noted when there is food and a social hour after the meeting.

Another idea presented was the offering of a prize to the newspaper reporter who writes the best health article during the year 1955.

W. ROBYN HARDY, M. D., Chairman
Council on Medical Service and Public Relations

MEDICAL NEWS SECTION

CALENDAR

PARISH AND DISTRICT MEDICAL SOCIETY MEETINGS

Society	Date	Place
Calcasieu	Fourth Tuesday every other month	Lake Charles
East Baton Rouge	Second Tuesday of every month	Baton Rouge
Morehouse	Third Thursday of every month	Bastrop
Natchitoches	Second Tuesday of every month	
Orleans	Second Monday of every month	New Orleans
Ouachita	First Thursday of every month	Monroe
Rapides	First Monday of every month	Alexandria
Sabine	First Wednesday of every month	
Second District	Third Thursday of every month	
Shreveport	First Tuesday of every month	Shreveport
Vernon	First Thursday of every month	

L. S. U. MEDICAL EXPERT TO MAKE FAR EAST TOUR

Dr. Robert A. Matthews, head of the department of neuropsychiatry at the Louisiana State University School of Medicine, will participate in a 30-day tour of the Far East as a consultant to the Surgeon General of the Army.

The tour will take him to military installations in Japan and Korea primarily. He will make an inspection of the Army's medical facilities, make staff evaluations and study the efficiency of the psychiatric service available at the installations. Dr. Matthews made a similar tour of the medical facilities in 17 German cities last year.

The LSU professor will also give a number of lectures in neuropsychiatry, will conduct teaching seminars and will serve as a consultant in problem cases as a service to the Army's medical experts.

Dr. Matthews will leave the United States October 5 for Tokyo. The tour has been arranged to permit Dr. Matthews to assist and advise the Theater Surgeon and the hospital staffs to assure that patients are receiving the best medical care available.

48TH ANNUAL MEETING SOUTHERN MEDICAL ASSOCIATION

The 48th annual meeting of the Southern Medical Association will be held November 8, 9, 10, 11 in Saint Louis. The meeting begins with a general public session on Monday forenoon and between that time and Thursday noon, forty-eight half-day sessions will be held. The Association has met in Saint Louis four times previously and the president of the Southern Medical Association, Dr. Alphonse McMahon, heads the meeting in his own home town. The local committees have been active in their preparation for a welcome to this complete general medical meeting for which there is *no registration fee*, and St. Louis itself has many claims to fame in medicine.

Hotel accommodations are available and requests for room reservations should be sent to the Housing Bureau, Southern Medical Association, 911 Locust Street, Room 406, St. Louis 1, Mo.

NEW ORLEANS GRADUATE MEDICAL ASSEMBLY announces the 1955 POSTCLINICAL TOUR TO EUROPE

Following the 18th annual meeting of The New Orleans Graduate Medical Assembly, March 7-10, the group will leave New York on March 12 by Pan American World Airways "PRESIDENT SPECIAL" for Europe. The Postclinical Tour Committee has been most active and enthusiastic in rounding out a full program of entertainment, sight-seeing and arranging medical programs in Paris, Rome, Munich, Copenhagen, Stockholm and London.

The schedule is as follows: March 12—afternoon departure from New York arriving in *Paris* on March 13; March 17—*Rome* by morning flight from Paris; March 20 — *Florence* by afternoon train from Rome; March 22—*Venice* by afternoon train from Florence; March 25—*Munich*—arrive by train in the morning; March 27—*Copenhagen* by afternoon flight, via Frankfort; March 31—*Stockholm* by afternoon flight; April 3—*London*

by morning flight.

Departure may be made on April 7 from London by Pan American World Airways, arriving New York April 8, or, sail from Southampton on French Line S. S. LIBERTE, arriving New York April 13.

For further information and rates write Secretary, The New Orleans Graduate Medical Assembly, Room 103, 1430 Tulane Avenue, New Orleans 12, Louisiana.

"ATHLETIC HEART" THEORY QUESTIONED

The term "athletic heart" should be scrapped because it is used with too many different meanings to describe a condition that "probably does not exist," an editorial in a recent (July 17) Journal of the American Medical Association said.

It said the many reports on the effect of exercise on the heart lead only to the conclusions that "infections are more important as a cause of cardiac disease than exercise, that exercise even when strenuous will not damage a normal heart, and that persons with a heavy body build have a lower life expectancy than those with a lighter build regardless of the type or extent of their participation in sports."

However, there can be "no doubt" that strenuous exercise may injure a heart that is already weakened, and young athletes should have close medical supervision, the editorial added.

BOOK REVIEWS

The Anatomy of the Nervous System: Its Development and Function; by S. W. Ranson and S. L. Clark, Ninth Edition, Philadelphia, W. B. Saunders Co., 1953, pp 581, figs. 434. Price $8.50.

The latest edition of this fine textbook continues the tradition which has made it justly famous throughout the past three decades. The first seven editions were published under the sole authorship of Dr. Ranson; this is the second edition appearing since his death, with Dr. Clark entirely responsible for the revision. The revision has not allowed the force of tradition to prevent incorporation of changes needed to keep the presentation abreast of the times. As in the past, this book presents a firm foundation of the structural makeup of the central and peripheral nervous systems, and a brief but adequate description of their developmental history. Using these facts as building blocks, the functional basis of neuroanatomy is then considered in considerable detail. It is particularly in this latter feature that progress has been made in neuroanatomy in recent years, and Dr. Clark has made full use of the newer information in this field. A very successful effort is made at integration of structural and functional phases of the problem in such a manner that the emphasis is still centered on the anatomical concept of the nervous system as a whole.

Generous use is made in this edition of information derived from the fields of experimental and clinical neuroanatomy, but this material is not allowed to obscure the basic structural plan of presentation. It is used, rather, to augment and to clarify the anatomical concept and to present it as a living and working mechanism rather than as a static dissertation on details of structural parts.

This edition reflects several features of changing emphasis in the basic study of neuroanatomy. Two of these features might be mentioned: the facilitatory and inhibitory mechanisms centered in the brainstem, and the specific functions of the cerebellum. These changes, however, have been fitted into the chapter plan so that they disturb in no way the continuity or proportion of the book as a whole.

If this book merits any adverse criticism, it is the rather light treatment of the nervous pathways. The fundamentals of pathways and their relations are adequately presented in almost every case, but the detailed consideration is frequently lacking. These details are oftentimes not of primary importance of themselves, but they are frequently used with great profit in such courses as Neurophysiology and Clinical Neurology, which typically follow Neuroanatomy in the medical curriculum. It might be thus said that in this respect, the book is not fully adequate in bridging the gap between preclinical and clinical aspects of neurology.

RALPH N. BAILLIF, PH.D.

PUBLICATIONS RECEIVED

Grune & Stratton, Inc., N. Y.: The Digital Circulation, by Milton Mendlowitz, M. D.

Harvard University Press, Cambridge: Psychomotor Aspects of Mental Disease, by H. E. King, Ph.D.

Lea & Febiger, Phila.: Anatomy of the Human Body, by Henry Gray, F.R.S., edited by Charles Mayo Goss, M. D. (26th edit.).

The C. V. Mosby Co., St. Louis: Practice of Allergy, by Warren T. Vaughan, M. D., and revised by J. Harvey Black, M. D. (3rd edit.).

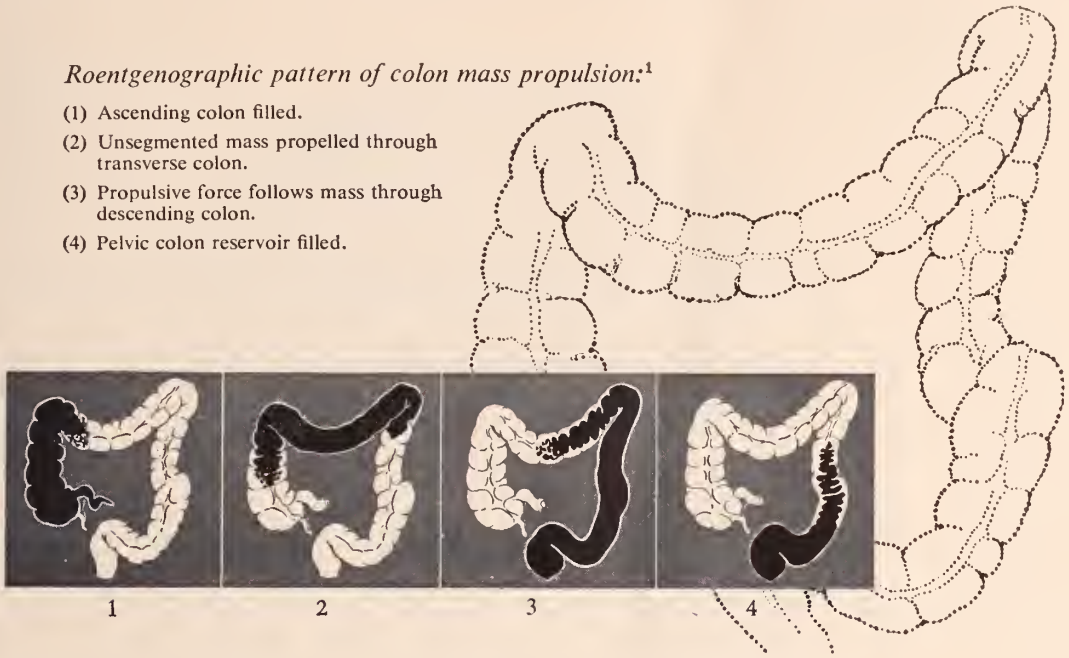
Philosophical Library, N. Y.: The Concept of Schizophrenia, by W. F. McAuley, M. D.

W. B. Saunders Co., Phila.: The Surgical Clinics of North America, by 27 contributors; Textbook of Pediatrics, edited by Waldo E. Nelson, M. D. (6th edit.).

University of Florida Press, Gainesville: Planning Florida's Health Leadership, a Summary by Russell S. Poor, Ph.D.

Roentgenographic pattern of colon mass propulsion:[1]

(1) Ascending colon filled.
(2) Unsegmented mass propelled through transverse colon.
(3) Propulsive force follows mass through descending colon.
(4) Pelvic colon reservoir filled.



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Such gentle stimulation is of distinct advantage in reeducating and reestablishing those reflexes which control bowel evacuation. Many factors may pervert the normal reflexes, causing finally chronic constipation. Among them are: nervous fatigue and tension, improper intake of fluid, improper dietary habits, failure to respond to the call to stool, lack of physical exercise and abuse of the intestinal tract through excessive use of laxatives.[2]

Correction of constipation logically, therefore, lies in the suitable adjustment of these factors. The characteristics of Metamucil permit the correction of most of these factors: it provides bulk; it demands adequate intake of fluids (one glass with Metamucil powder, one glass after each dose); it increases the physiologic demand to evacuate; and it does not establish a laxative "habit." Metamucil, in addition, is inert, and also nonirritating and nonallergenic.

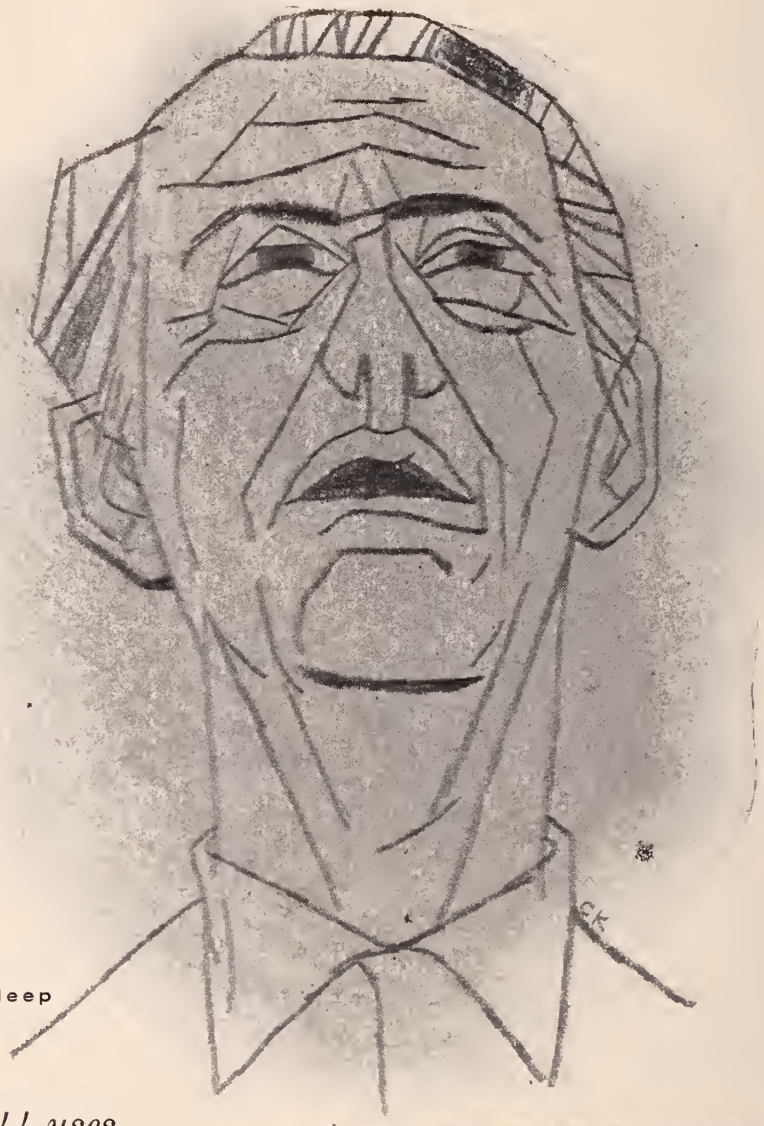
Dosage Considerations

The average adult dose is one rounded teaspoonful of Metamucil powder in a glass of cool water, milk or fruit juice, followed by an additional glass of fluid if indicated.

Metamucil is the highly refined mucilloid of Plantago ovata (50%), a seed of the psyllium group, combined with dextrose (50%) as a dispersing agent. It is supplied in containers of 4, 8 and 16 ounces. Metamucil is accepted by the Council on Pharmacy and Chemistry of the American Medical Association. G. D. Searle & Co., Research in the Service of Medicine.

1. Best, C. H., and Taylor, N. B.: The Physiological Basis of Medical Practice: A Text in Applied Physiology, ed. 5, Baltimore, The Williams & Wilkins Company, 1950, pp. 579-583.

2. Bargen, J. A.: A Method of Improving Function of the Bowel, Gastroenterology *13*:275 (Oct.) 1949.



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Results of some recent studies* are the following:

Influence of Wine on Appetite—Two wineglassfuls of 20 per cent alcohol (the concentration in the usual appetizer or dessert wine) have been found to relieve prolonged gastric tension. Two or three ounces of dry table wine can markedly increase the olfactory acuity and the appetite in anorexia, and stimulate caloric intake.

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1. Greenblatt, R. B., and Kupperman, H. S.: M. Clin. North America *30*:576 (May) 1946. 2. McGavack, T. H., in Goldzieher, M. A., and Goldzieher, J. W.: Endocrine Treatment in General Practice, New York, Springer Publishing Company, Inc., 1953, p. 225.

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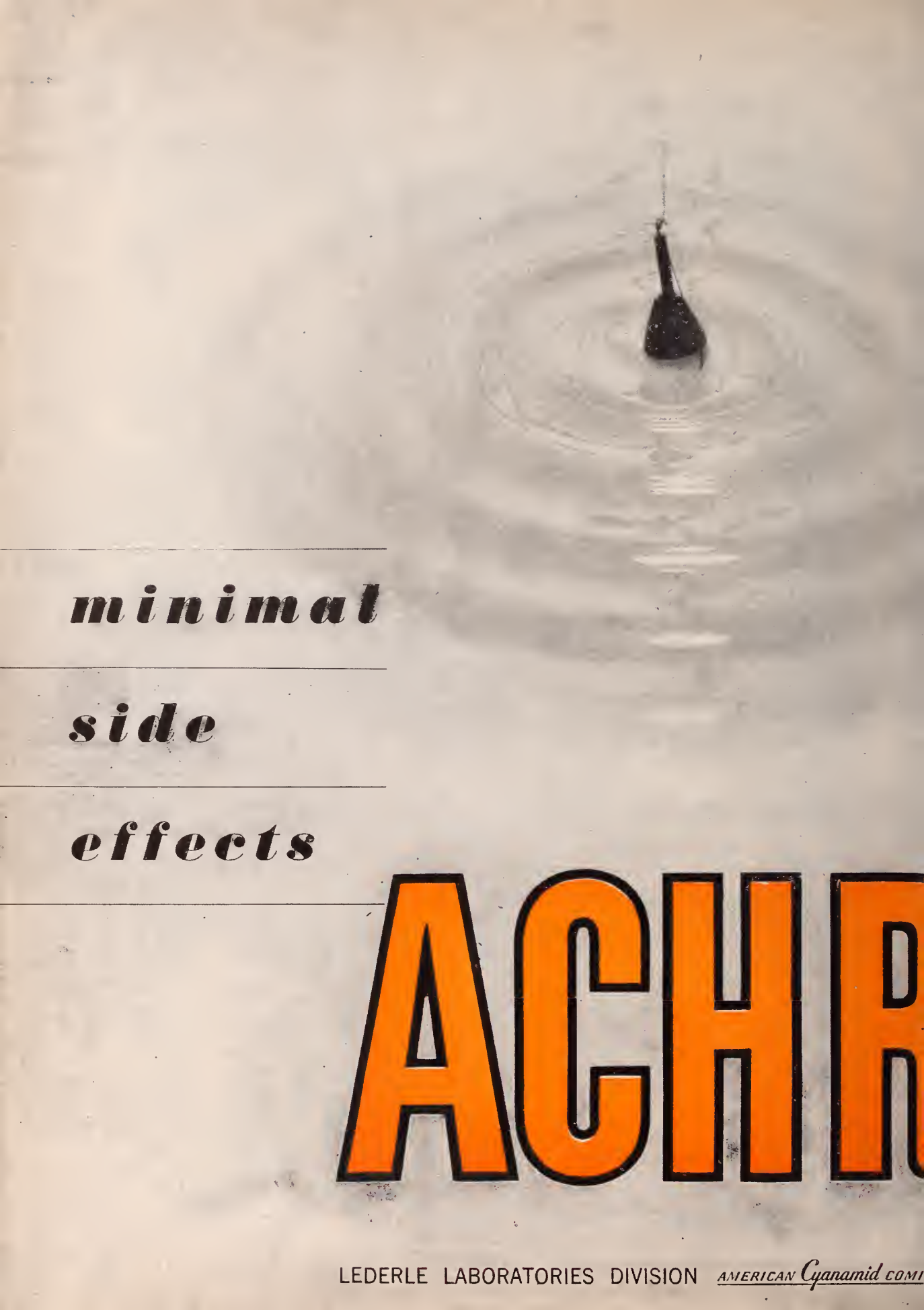
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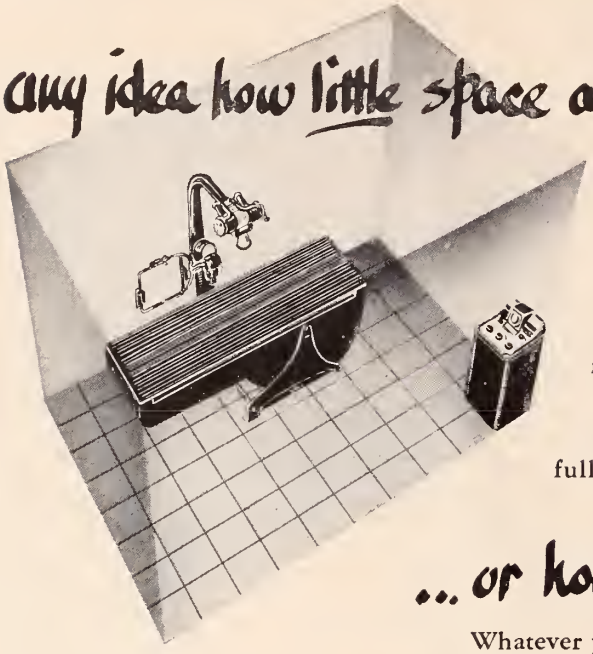
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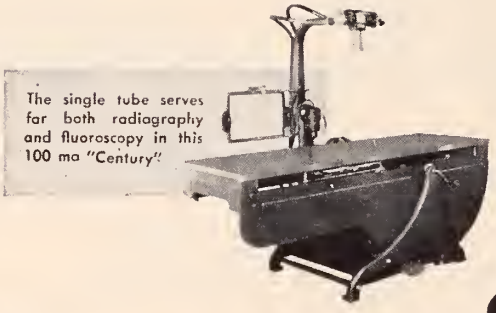
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2. Deutsch, E.: Scientific Exhibit, Gastroscopy, Interim Session A.M.A., St. Louis, December, 1953

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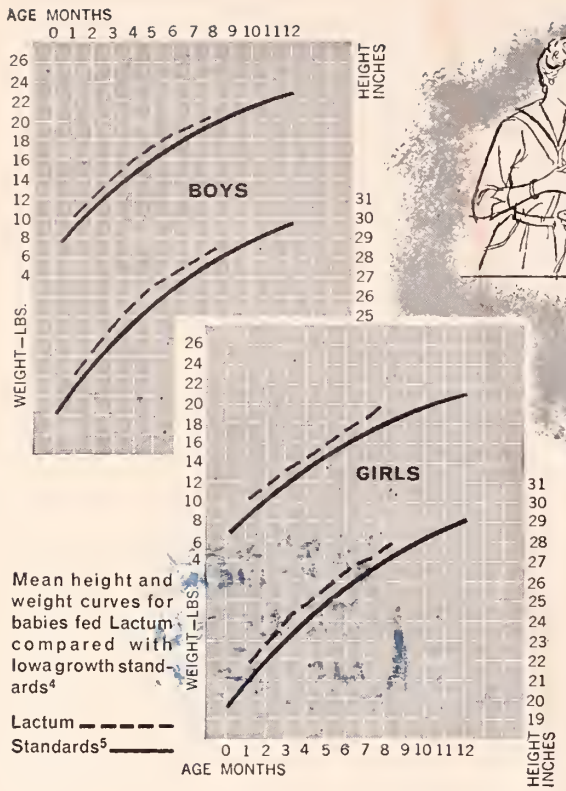
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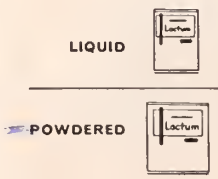
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(1) Jeans, P. C.: In A.M.A. Handbook of Nutrition, Ed. 2, Philadelphia, Blakiston, 1951, p. 275. (2) Albanese, A. A.: Pediat. 8: 455, 1951. (3) Holt, L. E., Jr., and McIntosh, R.: In Holt Pediatrics, Ed. 12, New York, Appleton-Century-Crofts, Inc., 1953, pp. 175-178. (4) Frost, I. H., and Jackson, R. L.: J. Pediat. 39: 585, 1951. (5) Jackson, R. L., and Kelly, H. G.: J. Pediat. 27: 215, 1945.

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Nature of Exposure	Condition of Animal: At time of exposure	Condition of Animal: During observation period of 10 days	Recommended Treatment
I. No lesions Indirect contact only	Rabid	—	None *
II. Licks 1. Unabraded skin	Rabid	—	None *
2. Abraded skin and abraded or unabraded mucosa	(a) Healthy	Healthy	None
	(b) Healthy	Clinical signs of rabies or proven rabid	Start vaccine at first sign of rabies in animal
	(c) Signs suggestive of rabies	Healthy	Start vaccine immediately. Stop treatment if animal is normal on 5th day after exposure**
	(d) Rabid, escaped, killed or unknown	—	Start vaccine immediately
III. Bites 1. Simple exposure	(a) Healthy	Healthy	None
	(b) Healthy	Clinical signs of rabies or proven rabid	Start vaccine at first sign of rabies in animal
	(c) Signs suggestive of rabies	Healthy	Start vaccine immediately. Stop treatment if animal is normal on 5th day after exposure**
	(d) Rabid, escaped, killed or unknown; or any bite by wolf, jackal, fox or other wild animal	—	Start vaccine immediately
2. Severe exposure (Multiple; or face, head or neck bites)	(a) Healthy	Healthy	Hyperimmune serum immediately. No vaccine as long as animal remains normal
	(b) Healthy	Clinical signs of rabies or proven rabid	As in III, 2, (a), but start vaccine at first sign of rabies
	(c) Signs suggestive of rabies	Healthy	Hyperimmune serum immediately, followed by vaccine. Vaccine may be stopped if animal is normal on 5th day after exposure
	(d) Rabid, escaped, killed or unknown, Any bite by wild animal	—	Hyperimmune serum immediately, followed by vaccine

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These indications apply equally well whether or not the biting animal has been previously vaccinated.
* Start vaccine immediately in young children and patients where a reliable history cannot be obtained.
** Alternative treatment would be to give hyperimmune serum and not start vaccine as long as animal remains normal.
Suggestions of Special Committee on Rabies, World Health Organization 1953.

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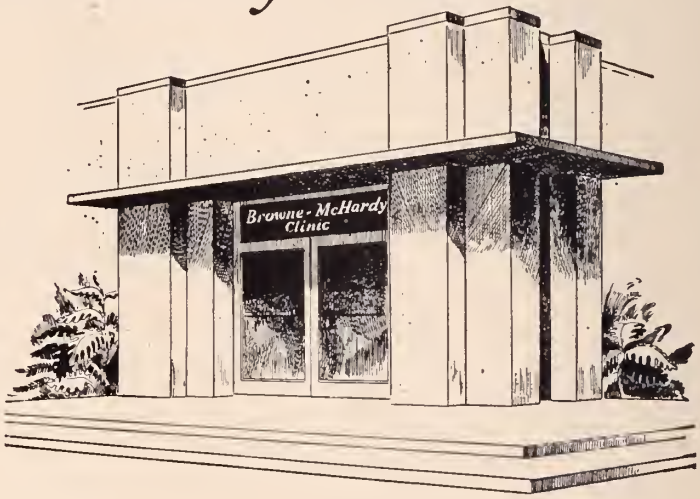
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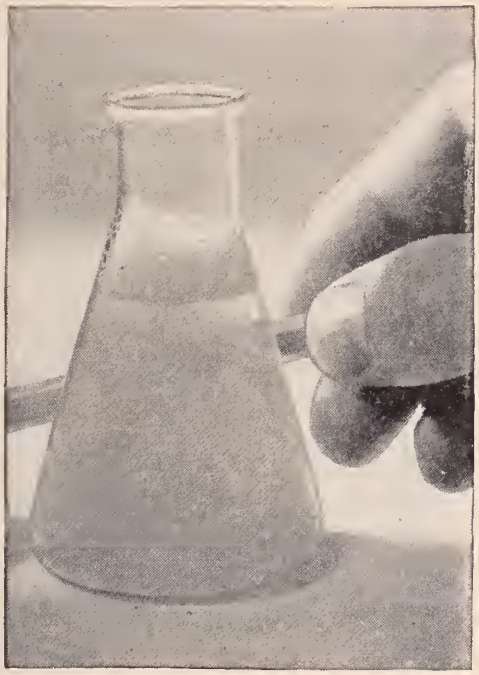
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1. *American Medical Association: New and Nonofficial Remedies, 1954. J. B. Lippincott Co., Philadelphia, p. 147*
2. *Scott, R. L., and others: Antibiot. & Chemo. 4:691 (June) 1954*

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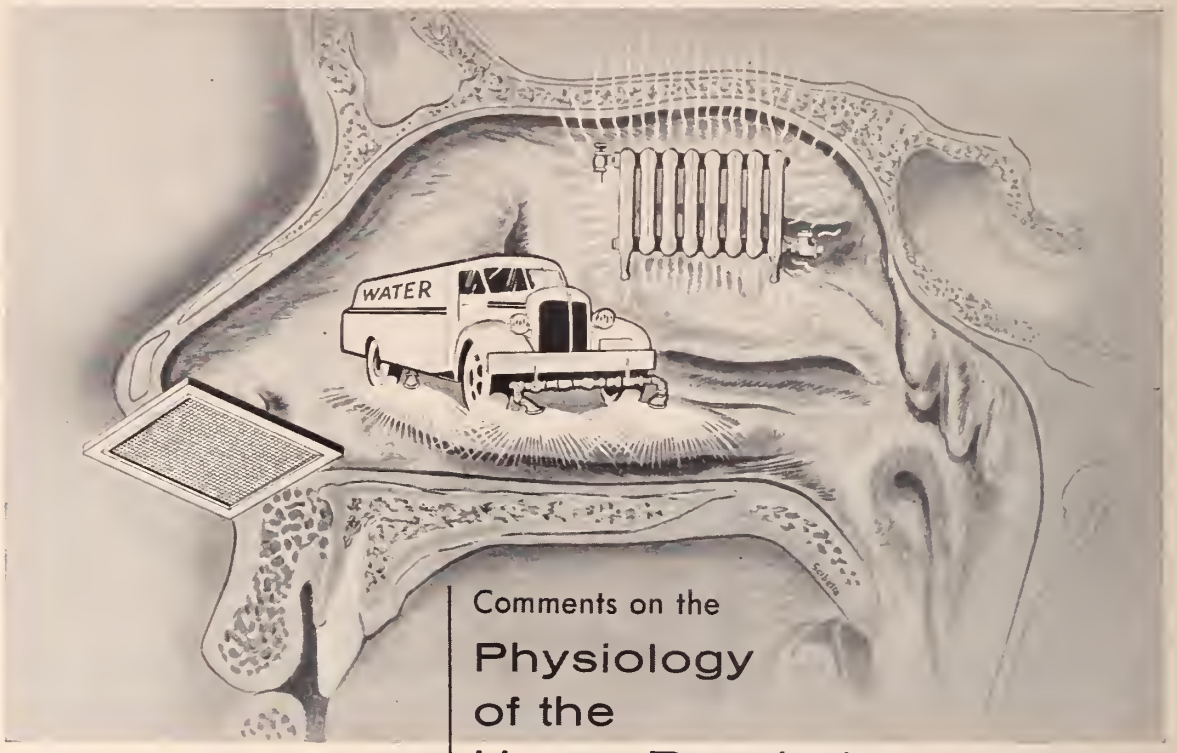
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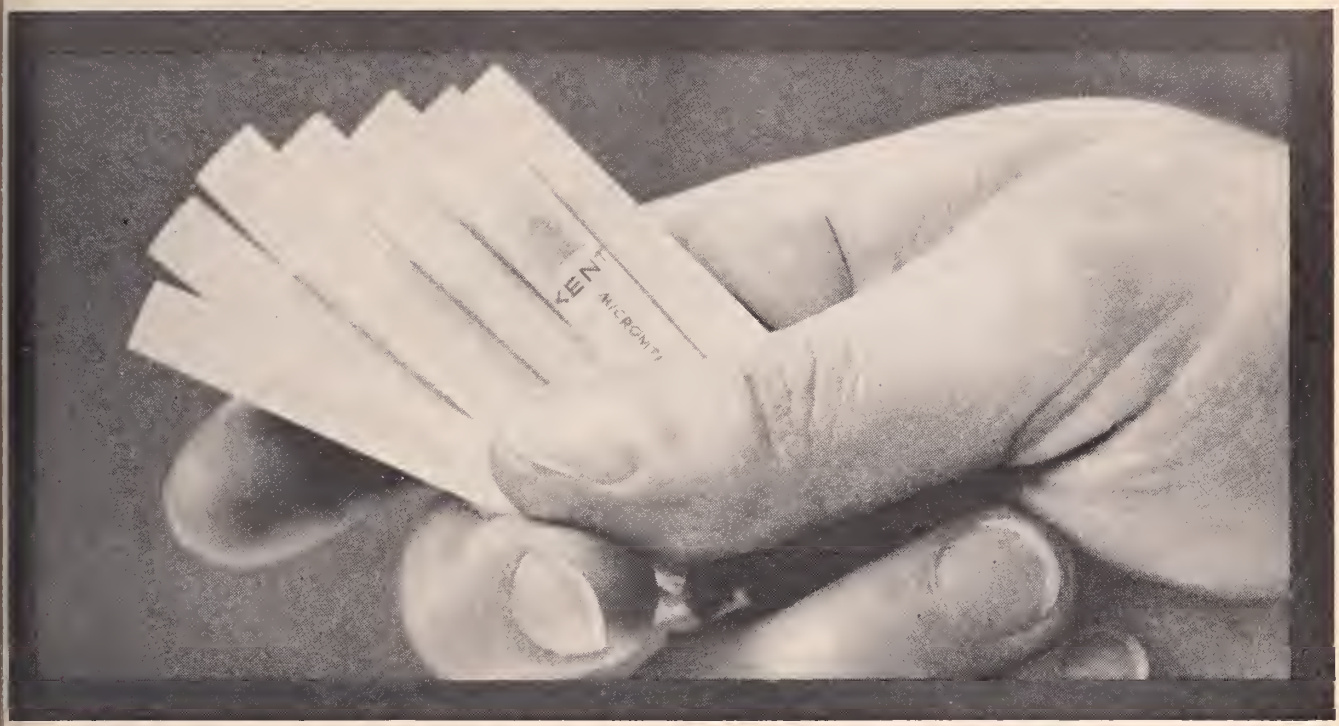
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EARLY DIAGNOSIS IN LEPROSY *

LEE D. McLEAN, M. D. †
NEW ORLEANS

The average physician in Louisiana should be better informed about leprosy than his fellow physician in any other state in the union. The fact that he lives in an endemic area where more native born residents acquire the disease than in any other state [1], plus the fact that the National Leprosarium is located here, focuses his attention on this uncommon but not rare disease.

Since the advent of the sulfone drugs in the treatment of leprosy, a new era has dawned in the history of this ancient disease. We now have drugs that definitely help the majority of cases. Although only a small percentage of patients at Carville [2] show bacteriologic improvement sooner than a year after treatment has been started, clinical improvement, particularly in the skin lesions, is decidedly more rapid and a decrease in the number of demonstrable bacilli in the nasal mucosa and skin has been the rule with long continued treatment. The destructive deformities so commonly seen in the past are today being effectively prevented when treatment is started in the early stages of the disease. We, as practicing physicians in Louisiana, are compelled now, even more so than before, to sharpen our index of suspicion and increase our factual knowledge of the disease in order that cases may be diagnosed as early as possible.

It is with these thoughts in mind that I have the temerity to present a discussion of some of the more recent concepts and early diagnostic features of leprosy. I am not a leprologist but a dermatologist who has had a basic interest in the disease, intensified by an opportunity to observe cases admitted to the U.S. Public Health Service Hospital at Carville.

We believe that leprosy is caused by the acid fast bacillus described by Gerhard Hansen in 1874. It has never been possible, however, to fulfill Koch's postulates. The organism has never been successfully grown on artificial media nor has it been possible to consistently transmit the disease to animals or to human volunteers by inoculation. We are not sure just how the disease is contracted, but in our present state of knowledge, the idea that the organism is transmitted from one individual to another is inescapable. The degree of contagion, however, must be mild. It is the consensus of opinion today that there are two circumstances that are most important and which, when combined, probably result in infection in more cases than any other circumstances: (1) household contact with an open case, and (2) exposure during childhood.

We believe that children are more susceptible to infection than adults. This does not mean that adults are not susceptible, but statistical studies of large series of cases in highly endemic areas point toward childhood contacts as the source of infection in the majority of

* Presented at the Seventy-fourth Annual Meeting of the Louisiana State Medical Society, May 22, 1954, in New Orleans

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cases.[3] Leprosy tends to occur with much greater frequency among blood relatives, than among those related only by marriage. The disease is seldom contracted by employees in leprosaria, and conjugal infection of one spouse by the other is rare. Children born to infected parents will not develop the disease if removed from this contact at birth.

Cochrane[3] has shown that the chance of infection increases proportionately with the closeness of contact with an open case, so that far more cases have had household contact than more casual relationships.

Since the International Leprosy Congress in Havana in 1948, there has been rather universal acceptance of a classification which promotes better understanding. According to this classification there are three types of infection: (1) the lepromatous, (2) the tuberculoid, and (3) the indeterminate. (Table 1)

LEPROMATOUS TYPE

There are two polar types of leprosy, the lepromatous and the tuberculoid. The lepromatous cases represent that type of infection in which the host apparently has little if any resistance to the existence, multiplication, and dissemination of the bacilli. Numerous bacilli can readily be found in the skin nodules, and in fact, in apparently normal skin. The clinical course of the untreated lepromatous case is usually progressive and downhill, punctuated with intermittent episodes of what has been called lepra reactions. These reactions vary from bouts of mild fever with aggravation of existing skin lesions, to acute reactions with high fever, severe neuralgia, necrosis of skin lesions, and major extensions of the disease.[5]

It is unfortunate that the lepromatous case is the type most frequently seen in the U.S. and especially in the native born cases of Louisiana. Besides the early macules, the skin lesions tend to be (1) reddened, elevated, often well defined nodules which seldom ulcerate, (2) widespread multiple infiltrated plaques, and

TABLE 1

	Lepromatous (usually open) *	Tuberculoid (usually closed) *	Indeterminate
Host resistance to bacilli	Minimal	High	Variable
Bacilli in lesions	Many bacilli easily found	None or hard to find	None or hard to find
Prognosis	*Poor*—definite tendency to progression	*Good*—strong tendency to spontaneous regression	*Variable*—usually changes to one or other polar type
Type of skin lesion most frequently seen	Macules-nodules-diffuse infiltrations-urticaria like lesions	Hypopigmented macules-plaques	Macules
Anesthesia	May be independent of skin lesions	Co-existent with skin lesions	Variable
Pathology	Granulomatous structure—Lepra cells	Tuberculoid structure	Simple inflammation
Lepromin reaction	Negative	Positive	Negative or moderately positive
Wasserman reaction	45-60% positive	Negative	Variable
Organs affected	Skin-nerves, mucous membranes, eye, testicles	Skin and nerves	Skin and nerves

* The terms "open" and "closed" are used to indicate whether or not M. leprae are demonstrable in routine laboratory examinations of the skin and nasal mucosa.[4]

(3) diffuse infiltrations in the skin producing a thickened orange-peel appearance. Anesthesia is not as well defined to the skin lesions themselves as is so typical of the tuberculoid cases. Nerve involvement is a constant feature of lepromatous leprosy. It tends to be bilateral and symmetrical, i.e., both hands or both feet, but it does not necessarily conform to the pattern of skin involvement. Nerve damage leads to muscular atrophy and contractures. Trophic changes may result in absorption of bone in the phalanges of both hands and feet and perforating ulcers, usually of the feet. In lepromatous leprosy not only are the skin and nerves involved but later the mucous membranes of upper respiratory tract and the eye. The testicles are not uncommonly involved later in the disease, producing atrophy and gynecomastia. The lepromin reaction routinely is negative and the Wassermann is positive in 45 to 55 per cent of cases.[6]

TUBERCULOID TYPE

Tuberculoid leprosy is the opposite polar type from the lepromatous case. Here we find a high degree of host resistance. It tends to run a relatively benign course and spontaneous remissions are frequently seen. These normally are closed cases. *M. leprae* are seldom found by routine methods and it is believed there is much less danger of transmitting the disease to others. Reactions also occur in tuberculoid cases but less frequently than in lepromatous cases. These episodes are characterized by exacerbations of the skin and nerve lesions. During the tuberculoid reactions, *M. leprae* are demonstrated by standard methods from the nasal mucous membrane and skin lesions. Therefore, during this time the tuberculoid case must be considered an open case.

Tuberculoid cases are seldom accepted at Carville today, except during major reactions, and for surgery, or for any other procedure requiring hospital care. They are sent back to be treated in their home areas.

Histologically, tuberculoid cases show noncaseating epitheloid tubercles (tuberculoid).

Skin lesions in tuberculoid leprosy are protean in nature, but we most commonly find the macular lesions with hypopigmentation. The macules are usually few in number and dry. They are sharply defined, and frequently situated on the face, extremities, and buttocks. Tuberculoid plaques may be only slightly to moderately elevated, often only at the margins, with an irregular or pebbled surface, called minor tuberculoid lesions; or they may be larger, markedly elevated and thickened lesions with deeper infiltration of the skin and associated nerves, in which case they are termed major tuberculoid lesions. Tuberculoid lesions typically and regularly not only show anesthesia, well defined in the area of the lesion itself, but absence of the red flare in the histamine test and an absence of sweating in the mecholyl sweating test. It may seem strange that nerve damage is so early and so constantly a feature of the benign type of the disease. This is due to the fact, as Arnold [3] so ably points out, that "whereas in lepromatous cases the nerves act as a repository for bacilli, in the tuberculoid cases with the host putting up a vigorous inflammatory defense reaction, the nerves become a battle ground and suffer severe and early damage." There is a tendency for the infection to be restricted so that we frequently see unilateral nerve destruction.

The indeterminate case, of course, shows some evidence of both polar types and may eventuate in one or the other.

EARLY DIAGNOSIS

I am sure that all of us would recognize a far advanced case of leprosy but what we must learn to do is diagnose it early. Of course we must have a high index of suspicion and remember that we live in an endemic area. Then there are certain basic features that we should remember. In all cases of leprosy both the skin and nerves are affected early. In lepromatous involvement the skin manifestations are most often pronounced, with slower destruction of nerves and later mucous membrane involvement. But here we have the easy demonstration of bacilli in scrap-

ings from the lesions. In tuberculoid leprosy there are skin lesions and easily demonstrated nerve damage. The macule on the skin shows well defined and definite loss of sensation and anhidrosis.

DIFFERENTIAL DIAGNOSIS

It might be of some help to point out some of the most frequent diagnoses wrongly applied to cases of leprosy, thus denying early treatment to the patient.

1. Syphilis is probably the most outstanding erroneous diagnosis. This is actually not hard to understand as the appearance of the lesions may bear some resemblance, and especially since the Wassermann test is so frequently positive in lepromatous cases. Approximately one half the cases admitted to Carville have had a previous diagnosis of syphilis made at one time.[4] There are, of course, readily recognizable features which distinguish leprosy from syphilis: Secondary lesions of syphilis come on rather rapidly while the lesions of leprosy are much slower. Genital lesions are rare in leprosy. The outstanding difference is that nerve damage can always be demonstrated in leprosy and not in secondary syphilis. Furthermore, acid-fast bacilli are easily demonstrated in scrapings from lepromatous lesions. With the modern treatment of syphilis it is inexcusable to continue to treat a supposedly syphilitic case with no response of the skin lesions to adequate amounts of penicillin. Leprosy should be one of the diagnoses considered, a thorough search for nerve involvement made, and both a biopsy and scrapings for acid-fast bacilli performed.

2. The cutaneous manifestations of Boeck's sarcoid may closely resemble the cutaneous manifestations of leprosy. It is similar in its slow evolution and in its histopathological picture (tuberculoid leprosy). Bone changes may be present in both diseases. In sarcoidosis, however, there may be findings in the lung, and the lymph node enlargement seen rather often in sarcoid is seldom seen in leprosy. It is, of course, the associated nerve changes, and the almost invariable anesthesia of tuberculoid leprosy that makes the differential diagnosis, as well as the finding of acid-fast bacilli in scrapings from the lepromatous cases.

3. Syringomyelia is another condition that often causes confusion, principally because in this condition, as in leprosy, there is loss of sensation to pain, heat, and cold, particularly in the hands, with atrophy of the muscles and trophic changes—painless burns and bone absorption resulting in loss of fingers and toes. There are, however, no primary skin lesions in syringomyelia so that if there are skin lesions the diagnosis is not too difficult. The skin is nearly always involved in an early case of leprosy. If confusion exists, however, it is helpful to remember that syringomyelia is a central cord lesion and leprosy involves the nerves peripherally and actually in the skin. There is no thickening of the nerve trunk in syringomyelia, as is so common in leprosy. Tests such as the histamine test or the methylcholine sweating test demonstrate nerve damage in the skin in leprosy and not in syringomyelia.

It is well to remember in any neurological condition in which leprosy is being considered that thickening of nerve trunks, especially if nodular, is usually due to leprosy; also, that leprosy only very rarely causes loss of tendon reflexes.

Trophic ulcers in leprosy are secondary lesions as they are in any other disease which can produce them such as C.N.S. syphilis, diabetes, syringomyelia, peripheral vascular disease, or nerve injury.

Other diagnoses which have been wrongly made on leprosy patients include tinea circinata, tinea versicolor, achromia parasitica, vitiligo, pityriasis rosea, psoriasis, urticaria, erysipelas, erythema nodosum, erythema multiforme, neurofibromatosis (von Recklinghausen's disease), granuloma annulare, xanthoma tuberosum, and leukemia cutis. Leprosy seldom gives the typical clinical appearance of any of the above diseases but the skin lesions may look enough alike to be confusing.

EARLY LESIONS OF LEPROSY

We can see by the above list of diseases that the skin manifestations of leprosy

are varied and may not be typical in their appearance. However, if one is to make an early diagnosis, certain lesions should arouse suspicion. What then are the early lesions and where do they occur? The macule has long been considered the principal early lesion in leprosy. This occurs as a flat hypopigmented area, not a true milk white patch as in vitiligo, and it may have an erythematous border. These early macules may become infiltrated to form plaques. The center may regress, the borders becoming infiltrated and extending. Nodules often develop which are reddened, elevated, and fixed in the dermis and closely resemble lesions of lymphoblastoma or leukemia or early keloid formation. Infiltrations may be localized as in the ear lobes, presenting diffuse thickening.

If it is borne in mind that the skin and nerves are almost invariably affected at the same time, diagnosis is more readily made. The early macules are almost always associated with loss of sensation. First to be lost is the ability to distinguish heat and cold, next in order are light touch, pain, and deep touch perception. The most common large nerves to be involved are the ulnar and the superficial peroneal, resulting in sensory, motor, and trophic changes in the corresponding hand and foot. The ulnar nerve especially may be thickened and nodular and may be palpated behind the elbow as it passes between the olecranon and the medial condyle of the humerus. Loss of sensation is associated with disturbances of the sweat glands and hair follicles. The skin is apt to be dry and hairless. The skin of the lower extremities especially becomes ichthyotic and discolored. Cyanosis and coldness of the extremities suggest some loss of the neurovascular mechanism.

Certain areas of the body become involved more regularly with cutaneous lesions of leprosy than others and certain areas seem to be exempt from clinical involvement. The lobes of the ears, the alae nasi, the cheeks, the forehead, especially the supraorbital areas, the buttocks, and elbows are apparently sites of predilection for nodules, although they occur also on the trunks and extremities.

Certain areas of the body seem to remain exempt from lesions until late in the disease. These include the axilla, groin, neck, cubital, popliteal, the external genitals, the palms and soles.

SYMPTOMS

What are the symptoms that may bring patients to the doctor other than a skin manifestation which is commonly unnoticed or disregarded? They complain of paresthesias, of the hands and feet falling asleep or being heavy and swollen. Not infrequently they present themselves with a burn of the extremity which they did not feel when it occurred.

Lagophthalmos, droop of an angle of the upper lip, atony or slight atrophy of the muscles of the interosseous spaces or of the thenar or hypothenar eminences and thickened nerve trunks may be early neurological signs of disease.[7]

Since the onset of leprosy is insiduous and the early lesions are frequently unnoticed by the patient, and symptoms are minor or thought to be insignificant by both the patient and the doctor, we must be as careful as we are in the early diagnosis of cancer and keep our index of suspicion high. There are other ways of finding out the early case which should be emphasized and popularized. If we can educate the patient and the family and the public to realize that leprosy is just another disease then we can get cooperation from the patient and the family and close contacts. They can be examined periodically with the intent of examination clearly understood by both contact and doctor. Social workers can help more effectively and early cases become recognized. Treatment may then be started and the patient prevented from developing disabling and disfiguring sequela. The danger to other contacts is thus minimized. In this way we can stamp out endemic areas in Louisiana and the United States.

LABORATORY TESTS

The laboratory tests that are helpful should be well known to all doctors.

The finding of acid-fast bacilli in the

skin is the only unequivocal proof of the diagnosis of leprosy. This may be done in two ways, either by making scrapings from the skin lesions or by biopsy. The simplest way is to take a razor blade and squeezing the skin tightly with the fingers to prevent bleeding, make a superficial incision through the epidermis, then with the edge of the blade scrape serum and tissue juices from the side of the cut. This is spread thin on a glass slide and stained with the Ziehl Neelsen method. Scrapings from the nasal mucous membranes are not as reliable because other acid fast organisms are found there. Scrapings are also unreliable from ulcers, smegma producing areas, and from the dry epidermis itself.

Concentration studies of 3 by 5 mm. skin biopsies reveal *M. leprae* in all cases of leprosy. This is not a routine laboratory procedure. It is, however, being used and studied at Carville.

Biopsy is, of course, of considerable help and should be done on all suspicious skin lesions, using both the hematoxylin-eosin and acid-fast stains.

The histamine test is a reliable indication of intracutaneous, nerve damage. A drop of 1:1000 histamine diphosphate is placed on the skin inside the area to be tested and another drop outside. A pinprick is made through each drop. At each site a wheal will form, but the red flare about the wheal on the normal skin will not be present in the area where intracutaneous nerves have been destroyed.

The methylcholine sweating test is applied by painting both the involved skin and some of the normal skin around it with Minor's solution. This is 2 per cent iodine and 10 per cent castor oil in absolute alcohol. Over this is dusted powdered cornstarch. Then 0.1 cc. of a 1 per cent solution of methylcholine (mecholyl) chloride is injected at the border or in both the normal and involved areas that have been painted. Each drop of sweat produced will moisten the dry iodine starch mixture and turn it a deep blue. This test is not reliable on the face and is useful primarily to differentiate the early macules of tuberculoid leprosy from other lesions.

The lepromin reaction is actually not a diagnostic test for leprosy. It is useful only to help distinguish the tuberculoid from the lepromatous type and in this respect it is of prognostic value. The test material is not available commercially. It consists of a phenolized, boiled suspension of ground-up lepromatous granulomatous tissue in physiological saline solution. A small amount is injected subcutaneously in the forearm of the patient and read in three weeks. A nodule greater than 5 mm. in diameter at the test site with the histological picture of tuberculoid leprosy (Mitsuda reaction) indicates a benign or tuberculoid type of infection. The malignant or lepromatous type of disease gives a negative response in three weeks.

THERAPY

There is much interest in leprosy today. Since the beneficial effect of the sulfone drugs has definitely been established many more drugs have been proposed. New drugs that have been found useful against the Koch's bacillus and hold promise of affecting the Hansen's bacillus are constantly being tried. So far none of these has been proved to be more effective than promin or diasone, but no doubt a new drug soon will be found that will be even better and faster for patients with leprosy.

The principal interest at the International Congress of Leprosy, held in Madrid last summer, was centered about the possibilities of BCG immunization. In 1939, Fernandez [5] found that of 123 children who were negative to tuberculin and lepromin and then vaccinated with BCG, the tuberculin was reversed to positive in all but one and that, 92 per cent developed a positive lepromin reaction; also that twelve years later, in 1951, not one of a group of children so vaccinated had developed leprosy in spite of continuing to live with infected parents. It has been found that it is possible to give BCG by oral administration. Some observers feel that BCG administration may actually prevent infection or at least modify the disease should it occur so that it would

be of the tuberculoid variety.[8] Enthusiasm is probably much higher about this subject than facts would justify. It will take many years to evaluate the results but it will be interesting to follow this investigation.

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THE LABORATORY DIAGNOSIS OF LEPROSY *

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Although leprosy is not a common disease in the United States, Louisiana is considered to be one of the few states in which the disease is endemic. If leprosy is to be diagnosed sufficiently early for the patient to obtain the maximum benefit of modern treatment, the physician must have a fairly well developed index of suspicion. The protean forms in which leprosy may appear may bring the sufferer to almost any of the specialists in medicine, and the pathologist especially must be keenly aware of its many histopathological variations.

IMPORTANCE OF TISSUE EXAMINATION

The recognition of the disease by the pathologist is particularly significant inasmuch as many patients with obscure skin and/or neurological diseases eventually submit to one or more biopsies for histological interpretation. Further, tissue examination is of more significance in the diagnosis of leprosy than in most other diseases, for in leprosy there are few reliable correlative tests to assist in the diagnosis. The successful culture of the *Mycobacterium leprae* has yet to be accomplished. Confirmation of the claims of success of a few workers has been unsuccessful.

To illustrate the importance of tissue diagnosis and the necessity for the inclusion of leprosy in the clinician's and pathologist's differential diagnosis, the following two cases are cited:

Case No. 1: A middle-aged man was first admitted to a general hospital in a southern city with fever, malaise, and an erythematous, nodular rash of his face and arms. A diagnosis of fever of undetermined origin was made, and he was given penicillin and sulfa drugs. He was discharged as improved; however, he was readmitted six months later having had a recurrence of symptoms and enlargement of lymph nodes in axillae and groin. The skin nodules were again noted, and a biopsy of one of them was reported as erythema nodosum.

During the next eight months there were two more admissions, and during the latter one a second biopsy was performed which was reported as toxic dermatitis. Two years later the patient was again admitted complaining of fatigue, weight loss, fever, and chills, and it was noted that the nose had become deformed. The skin lesions were numerous and widely distributed. A third biopsy was reported as nonsuppurative panniculitis. A slide from a lesion was seen in consultation and a diagnosis of lepromatous leprosy was made. Acid-fast stains demonstrated *Mycobacterium leprae* in the tissue.

Case No. 2: A 65-year-old man entered a general hospital in the southwest. He had pigmented macular lesions of the face and extremities and areas of cutaneous anesthesia. These lesions were said to have been present for about twenty years, and other members of the family had a similar condition. The clinicians suspected leprosy and a biopsy was performed.

The laboratory diagnosis of the tissue was lupus vulgaris, because acid-fast organisms and globi were lacking. The clinical staff was dissatisfied with this impression. The microscopic sections when seen in consultation were found to be excellent examples of tuberculoid leprosy.

This case illustrates especially well the results of the inexperience of some pathologists with this type of leprosy. Acid-fast organisms are exceedingly scarce or absent in the tuberculoid type, and the

* Presented at the Seventy-fourth Annual Meeting of the Louisiana State Medical Society, May 22, 1954, in New Orleans

histologic picture strongly suggests sarcoidosis or tuberculosis.

LABORATORY DIAGNOSIS

The laboratory procedures which are the most likely to be diagnostic of leprosy are actually limited to (1) smears from skin and nasal mucous membrane scrapings, and (2) examination of microscopic sections from biopsy specimens of skin lesions or peripheral nerves.

Serological, biochemical, and hematological procedures do not offer any pathognomonic diagnostic information in this diease at present. It is of importance, however, to be aware of the fact that there is a false positive serological test for syphilis in the majority of cases of lepromatous type leprosy sometime during the course of the disease. Reuben L. Kahn [1] has studied the universal serologic reaction in these patients and felt that repeated determinations would serve to indicate clinical and immunologic trends in these patients. One of our laboratories is studying the treponemal pallidum immobilization test in leprosy; however, it is too early to draw conclusions from this work.

A significant number of cases with positive serologies also have abnormal cephalin-cholesterol as well as thymol turbidity reactions. It has also been observed that there are changes in the serum proteins resulting in increased total globulins with a lowering of the albumin: globulin ratio.[2]

It is not within the province of this paper to discuss the controversial lepromin test.

The selection of the sites from which smears are to be obtained is extremely important if an adequate specimen is to be obtained. Areas of infiltration or the margins of macules should be chosen. The skin is compressed between the fingers until it blanches. A minute incision is then made with the corner of a single-edged razor blade or scalpel into the dermis. The walls of the wound are then scraped to obtain tissue fragments which are spread on a new, recently washed glass slide. The usual Ziehl-Neelsen acid-fast stain is used. If no skin lesions are noted, the ear lobes are usually selected as a test site. Abrasion of the mucosa of the posterior nasal fossa following suitable topical anesthesia often yields excellent smears containing myriads of *Mycobacterium leprae*.

In the *lepromatous type* usually there are few to many acid-fast organisms in the smears. In the *tuberculoid type* it is very rare to find acid-fast organisms in the smears, except, perhaps, during an acute exacerbation. In the indeterminate type, organisms are rarely present.

In our opinion, the procedure offering the best opportunity for definitive diagnosis is a biopsy sufficiently large to include subcutaneous tissue performed with a scalpel rather than a skin punch. We prefer fixation in 10 per cent formalin solution, and the tissues are stained routinely with hematoxylin and eosin with the Fite, Cambre and Turner [3] modification of the Ziehl-Neelsen stain rather than the Kinyoun modification which stains *Mycobacterium leprae* poorly.

In the lepromatous type the dermis is infiltrated by large mononuclear phagocytic cells with pale, granular cytoplasm. These are the so-called lepra cells. They are distributed principally around capillaries and lymphatics, nerves, and accessory skin structures. Large round or oval spaces may be present. Acid-fast stain reveals these spaces to contain aggregations of lepra bacilli and represent the classic globi. The cytoplasm of the lepra cells also contains innumerable organisms.

Varying numbers of lymphocytes and plasma cells may be present. No giant cells, caseation, suppuration, or necrosis is seen unless some complicating factor has altered the picture. The histopathological features of the *lepromatous type* of leprosy are sufficiently pathognomonic that little difficulty is diagnosis should be experienced by one who entertains the possibility in his differential diagnosis.

The predominant feature of the *tuberculoid type* is the small, multiple granulomatous foci strongly suggesting sarcoid or cutaneous tuberculosis. The tubercles

contain numerous Langhan's type multinucleated giant cells. There is no caseation; however, numerous chronic inflammatory cells are present. The tubercles are found in the vicinity of blood vessels, lymphatics, nerves and in the subcutaneous tissue. *Mycobacterium leprae* are seldom seen in the tuberculoid type. The histopathological features of the *tuberculoid type* closely mimic other granulomatous conditions of the skin, and careful evaluation of the clinical history and physical examination is necessary before a definite diagnosis. Conditions which may simulate tuberculoid leprosy histologically are sarcoid of the skin, tuberculosis, granuloma annulare, beryllium granulomas, and some foreign body granulomas.

The *indeterminate type* may be histologically nonspecific. Inflammatory reaction in the dermis may consist of only banal infiltration of lymphocytes and monocytes around capillaries and nerves. Unless alerted by the clinician, the pathologist's index of suspicion must be very high if he requests that sections such as this be stained for leprosy bacilli.

CONCLUSION

In conclusion, we wish to emphasize that the pathologist plays a major role in the diagnosis and classification of leprosy. In order to successfully diagnose leprosy, he must develop a high index of suspicion and he must be sure that the acid-fast staining technique used in his laboratory will stain the lepra bacilli. He must realize that indeterminate leprosy may be histologically as nonspecific as chronic dermatitis. Finally, we wish to especially emphasize that several granulomas of the skin may be histologically indistinguishable from tuberculoid leprosy, and every patient with such histologic pictures should be clinically studied for leprosy.

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MODERN APPROACH TO THE PUBLIC HEALTH ASPECTS OF LEPROSY *

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It is the purpose of this paper to present some of the salient points about leprosy as they pertain to history, epidemiology, and the modern approach to the public health aspects.

In the popular mind, no other disease is regarded with deeper horror than leprosy. No other is believed to be more contagious or to work greater and more revolting physical havoc. Although leprosy is one of the oldest known diseases of mankind, it is still regarded by some medical men, as well as laymen, as a mysterious and horrible affliction. The unfounded fears and revulsion, born largely of ignorance, have hindered scientific study and the dissemination of accurate knowledge. Victims are not only feared and shunned with almost psychopathic dread, but are also subjected to the humiliation caused by the widespread belief that their condition is a shameful one due to unclean living. It is not, however, a disease of filth, race, social condition, moral transgression, or due to a curse of God, but rather is an infectious disease caused by the *Mycobacterium leprae* and undoubtedly spread by contagion. It occurs among the washed and the unwashed, the saints and the sinners of every race, as well as at every social and economic level. Half or more of those under treatment in the Public Health Service Hospital at Carville, Louisiana, the National leprosarium, show no disfigurement and could pass unnoticed in any public gathering, while a high percentage of the remainder suffer only minor disfigurements or scars.

Since the disease is prevalent nearly everywhere in the tropics and the subtropics, and is endemic in Louisiana as

* Communicable Disease Center, Public Health Service, U. S. Department of Health, Education, and Welfare, New Orleans, Louisiana. Presented at the Seventy-Fourth Annual Meeting of the Louisiana State Medical Society, May 21, 1954, in New Orleans.

well as in Texas and Florida, it has more than a passing interest and importance to all practicing physicians in Louisiana. Any part that we may play in this post-war world must include a recognition of the extent of the leprosy problem as well as a knowledge and application of accepted public health measures.

HISTORY OF SPREAD OF LEPROSY

The most prevalent belief is that leprosy, or Hansen's disease, had its origin in the upper reaches of the Nile, from where it spread to other parts of the world by way of trade routes, permanent migration of people, the slave trade, and movements of armies. (Figure 1).



Figure 1

There is considerable evidence to suggest that the disease spread from Africa to Asia Minor, from Asia Minor to Asia, and from China to Japan, Malaya, the Pacific Islands, and Australia.[1]

Leprosy was introduced into Rome by the return of Pompey's troops from Asia Minor around 62 B.C.

The disease was brought into Spain by Roman legionnaires and colonists during the fifth and sixth centuries. The Spanish troops in turn carried the disease into France during their invasion around 700 A.D., and from there it spread through Europe, including Norway and Sweden.

It is assumed that the disease did not exist in the New World (Western Hemisphere) until after the arrival of Columbus, and that it was introduced by individuals who had become infected in the older European foci. Later, cases were introduced from highly endemic areas in Africa through traffic in slaves. It was brought to South America as early as 1543, and soon thereafter a leprosarium was established in Columbia. It is estimated that in Columbia at the present time there are 12,000 to 15,000 cases. There is evidence of its presence in Mexico also about 1543. It was reported in the West Indies as early as 1687, and some time later in the Canadian Provinces of Nova Scotia and New Brunswick which were settled by the French.

The earliest available reference to the disease in the United States has been found in Roman's *Concise Natural History of East and West Florida*, published in 1776, in which reference is made to the occurrence of the disease in the province as early as 1758. (Figure 2).



Figure 2

The Negroes who were imported into the Americas as slaves came from that part of the African continent which today is one of the most heavily infected regions known.

About 1848, leprosy was introduced into Hawaii, supposedly by the Chinese, and it rapidly established itself there among the natives. The first local case was seen in 1853, and during the following ten years the disease spread considerably. By 1874, there were 11.88 cases per 1,000 population.

GEOGRAPHICAL DISTRIBUTION OF LEPROSY

Today, leprosy is limited chiefly to the tropics and subtropics and is mainly concentrated in India, Central Africa, China, and South America.[2] The present esti-

mated distribution of cases is shown in Figure 3. Since there are an estimated 3



Figure 3

to 5 million cases in the world today, this disease still remains a real problem.

The extent of the disease in the United States is difficult to determine because many cases are not recognized, many cases are not reported, and no country-wide, case-finding program has been conducted. (Figure 4). Some idea as to the



Figure 4

prevalence of the disease in this country can be obtained from the number of patients admitted to the Public Health Service Hospital at Carville, Louisiana, during the thirty-year period, 1921-1950, which averaged approximately 46 patients per year and totalled 1,371. During the past three years an average of 35 patients per year have been admitted from the various States.

Since the establishment of the National leprosarium at Carville in 1921, patients have been admitted from 39 of the 48 States and from the District of Columbia. A majority of the patients (80.2 per cent) came from the states of California, Texas, Louisiana, and New York. Nearly two-thirds (64.3 per cent) were admitted from California, Texas, and Louisiana.

Physicians and health officers must recognize the fact that individuals afflicted with this disease may appear in any section of the country (Figure 4), and should always hold a high index of suspicion for leprosy in obscure skin or nerve cases.

A large per cent of the patients admitted to the National leprosarium contracted the infection outside of the United States; 43.5 per cent were of foreign birth. Of the 409 admitted from California and New York, 85 per cent were of foreign birth. Many of the patients of native birth contracted the disease while residing in endemic areas in foreign countries.

There is a definite tendency toward concentration of the disease in limited areas. Figure 5 shows that a majority

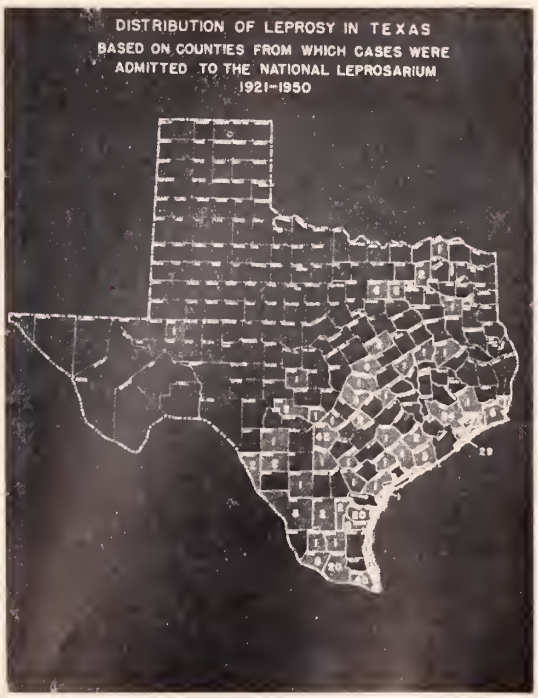


Figure 5

of the patients admitted from Texas came from counties located in the southeastern section of that State.[3] Patients have been

admitted from 52 of the 254 counties. Only 24 per cent of the patients admitted from Texas were of foreign birth.

Figure 6 shows that 95.1 per cent of

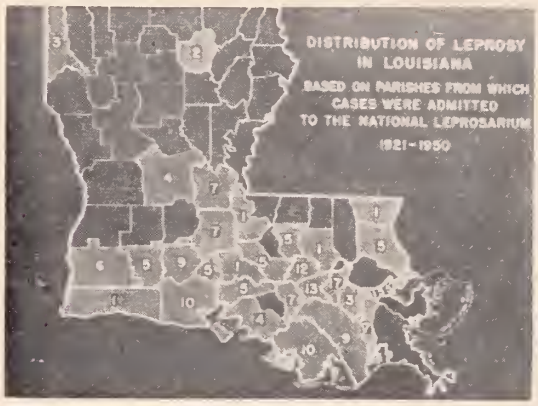


Figure 6

Louisiana patients admitted to the Public Health Service Hospital at Carville came from parishes located in the southern half of the State. Of the 320 patients admitted during the thirty-year period, 1921-1950, 155, or 48.4 per cent, came from Orleans Parish, only 4 per cent of which were foreign born. During the years 1894 to 1921, the twenty-seven year period of State operation, 321 persons were admitted from Louisiana and 17 from other States. A total of 658 patients from Louisiana were treated in the hospital at Carville from 1894 to May 1, 1954, which, together with 26 known cases not treated at the hospital, makes 684 cases of leprosy. It might be of further interest to know that of the Louisiana patients admitted to Carville approximately 33 per cent had onset of the disease more than five years prior to admission, and approximately 14 per cent had onset more than ten years before admission.

Although California is not an endemic State, it is included in this discussion since it can be seen that in this State also occurrence of cases has been fairly concentrated in a couple of areas. (Figure 7). A majority of the patients (63.9 per cent) were admitted to the National leprosarium from the two counties of San Francisco and Los Angeles. A total of 524 cases were diagnosed between 1921 and June 30, 1953. Of these 524 patients,



Figure 7

50 per cent were born in Mexico, 29 per cent in other countries (China and the Philippines especially), and 21 per cent in the United States.[4]

Patients have been admitted from only 12 of the 67 counties in the State of Florida. Only 14 per cent have been of foreign birth.[5]

Even within a city the disease may be concentrated in one or two sections. Such a concentration has occurred within the city of Key West, Florida, where a total of 65 patients resided while their disease was active. The address of one has not been recorded, but of the remaining 64, 55, or 85.9 per cent, resided in a relatively small area of the city, and 60.9 per cent resided in a smaller area approximately five blocks square within this larger area.

The conclusion which one may draw from the figures presented is that, although a large number of cases have been imported into California and New York, there has been little tendency for leprosy to spread among natives of either of these two States, even including those of the Oriental race. On the Pacific Coast leprosy has been primarily an alien disease.

The same is apparently true of New York State. In Louisiana, however, the disease occurs and spreads among native-born individuals. Also, in Texas, leprosy exists and spreads among the native-born, having its origin mainly in Mexico, and West Indies, and Louisiana.[6]

The disease appears to be more or less stationary in the United States. There have been neither increases nor decreases of any great importance.[7] The trend in Louisiana has been downward while that of Texas is rising. However, the apparent trends in these two States may be due to the fact that in Texas medical men are more vigilant in detecting cases and isolating them at Carville, while in Louisiana not all of the cases are being recognized. Like all epidemic diseases leprosy runs a course which, when represented by a curve, shows a fairly rapid increase after implantation into a favorable environment until a plateau is reached. During this period there is a fairly even number of cases from year to year, which is followed by a very gradual decline until finally the infection dies out. In leprosy, however, it takes generations, or even centuries, for completion of the curve.

THERAPEUTIC ADVANCES

During the past decade men of science have unlocked and brought under control the mysteries and secrets of atomic energy, and have brought into the home the wonders of television. During this same period the world moved toward modernizing and humanizing the medical and social problems connected with leprosy. Significant therapeutic advances have occurred with the introduction of the sulfone drugs (promin, promizole, diasone, promacetin, and sulfetrone).[8] Clinical improvement of specific skin and mucous membrane lesions is definite and universal. Mucosal lesions respond to treatment very readily and usually earlier than cutaneous lesions.[9] The healing of these results in relief of nasal obstruction, epistaxis, dyspnea, and hoarseness. Emergency tracheotomies are no longer necessary. Oral lesions improve so rapidly that, whereas before the advent of sulphones an average of 3,000 oral treatments were necessary at Carville annually, now only an occasional oral treatment is given. Clinical improvement is progressive and sustained, and is followed by a reduction of leprosy bacilli in the skin lesions, but three to five years of treatment are usually required before complete disappearance of the bacillus is obtained. Relapse may occur unless the patient continues to take at least one diasone tablet daily after he has been discharged as arrested.

Optimistic changes in thinking and concept among those of us who work intimately with leprosy have resulted in significant advances in the modern public health and social approach to the problems which confront us. Today, with the effectiveness of the newer sulphone drugs, we see in these patients not only an astonishing physical improvement, but also a stronger desire to live as others live. More than ever before they want to maintain their homes and personal contacts with their families. They want to prepare themselves for a better job after they are discharged from Carville. The Public Health Service has established a fine educational and recreational program at the hospital to prepare the individual for some useful and gainful occupation upon discharge. Occupational and physiotherapy, and reconstructive and plastic surgery have taken on a new meaning for the patient.[10]

Unfortunately, neither the manner of transfer of the causative organism nor the portal of entry into the new host is known. The organism apparently has never been cultured and all animal inoculations have been failures. However, it is generally accepted that leprosy results from contact with an infected person, or possibly with contaminated articles, and it follows that prevention of infection requires avoidance of such contact. The control of leprosy, therefore, entails primarily the detection of all sources of infection (case finding) and the control of these cases in such a way as to prevent trans-

mission of the disease to well people.

There are two sources of infection to consider: (1) the bacteriologically positive lepromatous case, and (2) the arrested lepromatous case which may reactivate and again become bacteriologically positive. It is indeed gratifying to see that the tendency today is to consider each case on its own merit, and that the tuberculoid-type cases are no longer considered infectious to the point where isolation is necessary.

Patients with the lepromatous form have mucosal lesions such as ulcers, nodules, and infiltrated plaques in the nose, throat, and mouth. These active lesions contain large numbers of bacilli which are discharged easily with the secretions or with the shedding of scabs from the nostrils. On the other hand, the tuberculoid-type represents high resistance to the existence, multiplication, and dissemination of the bacilli and, therefore does not manifest these mucosal lesions.

The present control program in Louisiana, to be effective, must have the cooperation of members of the State Medical Society as well as that of the patient and members of his family. It will continue to be difficult to obtain this desired cooperation until the entire public and the medical and nursing professions have been enlightened as to the real nature of the disease and to the current accepted beliefs relative to its transmission. The entire population must regard this disease simply as a communicable disease, transmitted from person to person by contact, and must be aware that all cases are not considered as sources of infection and that the noninfectious type (tuberculoid) may continue a normal existence, including treatments at general or private clinics, without endangering others.[11] The patient himself and the members of his family must be told the truth and instructed relative to the various factors of this disease. Such instruction will assure better cooperation, and through this type of cooperation other early cases will be discovered.

Needless to say, all active lepromatous cases should be referred to the Public Health Service Hospital at Carville for treatment, since it is dubious that any of these cases can be satisfactorily isolated in the home. The advantages obtained by treatment in Carville therapeutically so outweigh those obtained from treatment elsewhere that all active lepromatous cases should be urged to enter this hospital.

As there will always be cases of leprosy not hospitalized in Carville but in need of treatment (AWOL, tuberculoid, and medically-discharged positive cases), every attempt should be made to assure that these individual cases get treatment as adequately as possible, either in clinics or by private physicians. To this end a biweekly clinic is held at the U. S. Public Health Service Hospital in New Orleans, Louisiana, where examination, consultation, and treatment may be obtained free of charge.

SUMMARY

The history of leprosy reveals its occurrence in every climate but also indicates its decline or disappearance from most of the temperate zone.[1] Today it is chiefly a disease of the tropics and subtropics.

Sulphone therapy has materially altered the outlook for the leprosy patient and the curability of the disease, but further research toward development of more effective therapeutic agents is urgently needed. Search must continue for a more effective and specific drug against this acid-fast bacillus which is still causing so much fear, anxiety, distress, and economic chaos in the lives of millions of men and women.

The only available means of preventing leprosy is by control of the active lepromatous cases in order to reduce the exposure of healthy individuals.

Along with the new chemotherapy must come a new social outlook and attitude toward the disease, thus eliminating the social stigma of leprosy.

A modern and intelligent approach to the public health aspects of leprosy implies training of adequate medical and nursing personnel; a national campaign

of publicity; increased interest and vigilance, with a high index of leprosy suspicion among pediatricians, practitioners of general medicine and surgery, neurologists, orthopedists, dermatologists, and others conducting special clinics for children. In the words of Sir William Osler: "Yesterday is but a dream and tomorrow is only a vision. But today well lived makes every yesterday a Dream of Happiness and every tomorrow a Vision of Hope. Look well, therefore, to today!"

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MONILIA (YEAST-LIKE) INFECTIONS OF THE SKIN AND MUCOUS MEMBRANE *

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Since the advent of the newer wide spectrum antibiotics and the frequently resulting mucous membrane irritations, there have been an increasing number of cases of *Candida albicans* infections following their use. Due to an entirely different set of factors, there has been a like increase in *C. albicans* skin infections. Chief among these factors are more powerful detergents and cleaning solutions, the modern passion for cleanliness, and the fact that the young housewife must do her own work. Again, in consequence of the lengthened life span, we find yeast infections associated with such geriatric problems as diabetes, false teeth, atrophic tissue changes, and carcinoma.

INCIDENCE

Investigations during the last five years have helped clarify our understanding of the pathologic importance of the yeasts. The incidence of pathogenic yeasts was investigated by Marples[1] et al., with the finding of *Candida albicans* in the mouth of approximately one third of a group of 278 children, and one half of a group of 137 young adults. In about 31 per cent of 188 stool examinations the same organism was cultured. In another group of a hundred children, McGovern[2] et al. found *C. Albicans* in the mouth in 13 per cent and in the rectum in 6 per cent. No strains of *C. albicans* were isolated from the skin of the fingers of either children or adults in Marples' cases, and the incidence of the organism was unrelated to the nutritional state or the presence or absence of enlarged tonsils. It was, however, increased among adults with artificial dentures. I have heard both Drs. Benham and Hopkins[3] state on many occasions that this organism is a normal inhabitant of the mouth and intestinal tract, but not of the skin. One may conclude that, for the most part, *C. albicans* infections are endogenous.

RELATIONSHIP TO ANTIBIOTICS

There are many theories as to the apparent relationship between administration of wide spectrum antibiotics and supra-infection with antibiotic resistant micro-organisms including both fungi and bacteria.

1. One theory advanced by Harris,[4] in 1950, maintained that the normal flora supplies certain nutritional requirements to the host. In the event of a disturbance of equilibrium such as results from antibiotic therapy there is a lowering of tissue

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resistance or actual tissue breakdown, affording a portal of entry for organisms which are always present, but kept in abeyance by a normal, healthy mucosa. One investigator, Harris,[4] in 1949 and 1950, singled out the nutritional factor thus disturbed as Vitamin B complex.

2. A second theory advanced by Miller,[5] in 1951, maintained that the administration of antibiotics upset the equilibrium in which normal flora exist. There resulted a suppression of susceptible micro-organisms and a substitution of resistant ones, which multiply to the point of overwhelming the tissues. Kligman[6] confirmed this in 1952, and found further that there seemed to be a suppression of gram positive organisms and a substitution of gram negative ones.

3. A third theory seeks to incriminate the antibiotics as directly stimulating the growth of *C. albicans.*

The suppression substitution theory and the nutritional disturbance theory are not mutually exclusive and are probably both true.

Typical thrush in infants or older children has little if any relationship to the antibiotics. This holds true for thrush in adults. However, investigators uniformly report that in adults who have received antibiotic therapy, usually over long periods of time, there are undesirable side effects including glossitis, stomatitis, sore throat, black hairy tongue, proctitis, pruritis vulvae and ani, and diarrhea, due in many instances to tissue invasion by *Candida albicans.* It has been stated above that tissue invasion with *C. albicans* occurs after long term therapy. However, diarrhea or anal and vaginal involvement may occur early and may be very severe with distressing symptoms of burning, itching, and vaginal discharge. It has been the experience of many investigators that the application of antibiotics to the skin is not followed by the appearance of this organism. In the light of theories we have presented above this would seem obvious since *C. albicans* is not a normal inhabitant of skin tissue. *C. albicans* infections of the skin are not by any means a rarity, but unless already present, there seems to be little relationship to antibiotic therapy. Dermatitic skin has been found to possess this organism after local antibiotic therapy, but since Klingman[6] has shown that stasis ulcers with *C. albicans* as a contaminant have been known to heal with continued use of these antibiotics locally, it is not felt to be of any great moment. It should be pointed out that the findings of *C. albicans* in diseased tissue does not necessarily prove this fungus to be the cause of the condition.

RULES FOR USE OF ANTIBIOTICS

From our own experience we have established the following rules for the use of wide spectrum antibiotics in patients:

1. Give antibiotics over short periods of time and thus allow normal flora to regenerate naturally.
2. Stop any one certain antibiotic after its use for several days with no favorable result.
3. Instruct patients as to the nature of possible side effects and discontinue the drug if they appear.
4. Use milk, buttermilk, lactonex tablets, along with this drug, to help maintain a more normal intestinal flora. B_{12} vitamin tablets are also of value.
5. Do not use these drugs promiscuously.
6. Look for other underlying pathology when yeast infections appear.

In all acute severe reactions we give B_{12} by injection or orally. Milk, buttermilk, or lactonex tablets are also given, in an attempt to restore a more normal bacterial intestinal flora.

ORAL CASES

In the oral cases with severe stomatitis, potassium permanganate 1-10,000 aqueous solution mouth washes are used alternating with (diluted at first) cepacol mouth washes and a soft bland diet, and gentian violet for a limited use when the acute stages have begun to subside. Black hairy tongue is difficult to clear up and fortunately most cases regress spontaneously. Persistent cases are curetted and painted with 15 per cent phenol, and neutralized

with alcohol once a week. A few respond to gentian violet and cepacol. For anal and vaginal conditions we use oatmeal, soda, or aveeno baths, and little in the way of local applications until some improvement has occurred, when ceepryn vaginal suppositories, or gentian violet, or propionic gel is employed with daily alkaline douches. Gentian violet has been more irritating to vaginal mucosae than ceepryn in our experience. When trichomycosis infections are also present, devegan tablets are alternated with the yeast destroying drugs.

Thrush in infants is not nearly so common as it once was. It occurred in epidemics on infants wards, in the past, especially during a strange period of medical thinking when it was the custom to thoroughly clean out the mouth with gauze following each feeding. Mothers occasionally acquired the infection on the nipples from their nursing infants in this manner. Now thrush has given way to circumoral skin infections in infants and young children who drool a great deal. This eruption is a bright red, wet, sharply defined lesion surrounding the lips with an abundance of budding yeast cells and mycelia which are easily recovered on scrapings from the margins. In adults, perleche—sometimes with thrush—is often due to ill-fitting dentures and a lessened ability of the mouth to care for its own saliva. A wet debilitated skin that allows for yeast infection is thus present. This is too often diagnosed as vitamin deficiency by otherwise competent physicians. Diabetes often accompanies this condition. It must be looked for in each instance. The finest treatment, other than an attempt to correct mechanical factors, is the use of gentian violet, 1 or 2 per cent aqueous, for a period of treatment of seven or eight days.

Sometimes yeast infections of the lips can be secondary to other irritative lesions of the lips. Two recent cases were so diagnosed in our own practice, because, I suppose, of our recent renewed interest in this subject. One of these had been operated on previously for carcinoma of the lip and this new persistent lesion on the other side of his lip followed a prolonged exposure to sun. It, of course, worried him that he was developing a new carcinoma. It was a sharply defined wet, moist, scaly area. Scrapings from a wet base revealed great numbers of budding yeast cells. Treatment with gentian violet gave prompt relief. The other patient, a white woman in her late forties, had suffered with a cracked, wet, scaly condition of her lips for over a year. The condition followed severe sunburn and had been diagnosed as a contact dermatitis. Scraping here too revealed many budding yeast cells. Treatment with gentian violet and zephiran chloride, the discontinuance of grease, and the local use of milk of bismuth has given her prompt relief. She is not yet cured, however.

CUTANEOUS MONILIA

Cutaneous monilia found most often in intertriginous areas and in obese individuals may occur primarily or secondarily to other conditions affecting warm, moist areas. It is characteristically a red, weepy, and sharply circumscribed lesion and as ordinarily candida are not found on the normal skin, scrapings from the margins are diagnostically significant. Treatment is to avoid water and to use tincture of zephiran chloride, 1:1000, tinted or untinted, and at first dilute, followed by the dusting on of heat powders. Gentian violet does not, in our experience, give as good results and it tends to react on the skin after the prolonged use which is sometimes necessary.

Yeast infections on the glans penis are sometimes acquired from the female, and are often found in the noncircumcised. Here too, zephiran chloride and sometimes gentian violet are of value.

YEAST INFECTION OF HANDS

Most important from the standpoint of both morbidity and incidence are yeast infections of the hands. Here one finds the start of that most dread of all diseases to the housewife, namely "dishpan hands." Soap accumulates under rings and with its corrosive action destroys and removes all surface epithelium. The consequent

lowering of resistance allows for invasion by the yeast organism, resulting in erosio interdigitalis blastomycetica, and then the gradual metamorphosis of this condition into the typical picture of infectious eczematoid dermatitis of the hands. One of our patients, a young housewife, had such a condition develop under her wedding ring and simultaneously with its development a chronic chafed area of her groins suddenly erupted into a typical and extensive yeast infection. Both areas were diagnosed on scrapings when budding yeast cells were found in large numbers.

There is, in my opinion, no greater advance in the treatment of the infectious eczematoid dermatitis stage than the use of Domboro soaks, used as hot as possible and for at least thirty to forty-five minutes per day. Gentian violet in calmer stages is still an excellent remedy.

Yeast paronychia and eponychias are so often secondarily infected with bacteria that patients seek help because of severe, painful infections which must be treated as such before the yeast infection may be dealt with.

The green finger nails as described by Moore and Marcus[7] are sometimes due to *C. albicans*. In his cases the infected nails were light to dull green with the lesion beginning at the outer margin of the nail and extending into the nail plate. Here also, gentian violet preceded by extensive and constant trimming of nails is beneficial.

The prevention of hand yeast infection calls for reduction in exposure to soap and water, fruit and vegetable juices, and other chemicals and irritants. This is accomplished best by the use of thin cotton gloves worn under rubber gloves when this type of exposure is anticipated.

SUMMARY

Monilia infections are caused by a variety of factors, more than one of which may be present in any given case. The problem of infectious eczematoid dermatitis of the hands may at its inception have been due to yeast. Diabetes and other chronic conditions must be sought for as underlying causes, no matter what the circumstances may be that give rise to the invasion of the skin and mucous membrane by this organism. Patients should be instructed as to possible side effects when taking the newer wide spectrum antibiotics, so that they will discontinue them when symptoms arise.

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DISCUSSION

Dr. James J. LaNasa (Baton Rouge): We, in Baton Rouge, are all seeing an increase in the incidence of Monilia infections, and seem to be having more trouble in getting them under control than in previous years.

I agree with Dr. Kennedy et als that the antibiotics should be used over short periods of time and should not be used promiscuously.

As far as treatment is concerned, I cannot say which is best. In skin infections, I feel that gentian violet—although your patients may hate you—is better locally than other drugs; it should be used sparingly and in infrequent applications. For a time, I experienced better results with zephiran chloride, but not recently. The B complex vitamins, B_{12}, crude liver injections, are definitely of value and should be used. Superficial x-ray, of course, is useful, but certainly, not the entire answer because of dosage limitations, etc.

Recently, my partner, Dr. Marion E. Kopfler, has been using panthoderm cream, either plain, or the panthoderm R.S., with definite aid in the treatment of Monilia infections of the skin.

Dr. Leslie K. Mundt (New Orleans): I appreciate the opportunity of discussing Dr. Kennedy's fine paper. The subject has been covered extremely well, but I would nevertheless like to summarize and re-emphasize a few of the practical points that constantly confront the general practitioner and dermatologist. The common monilial infections of the skin include onychias and paronychias, erosio interdigitalis blastomycetica and intertriginous eruptions in various parts of the body. The clinical syndrome, perleche, frequently is caused

by a yeast infection and perpetuated by the constant bathing of the skin with saliva at the angles of the mouth in edentulous older people. Monilial infections are characterized by maceration and shininess, vesiculation, redness, bogginess, and secondary infection. Moniliasis in its various forms has always been with us, but as Dr. Kennedy pointed out, it is now more of a problem than ever before because of the widespread use of antibiotics. Most of us not infrequently see an acute stomatitis or vulvitis resulting from and following the administration of one of the newer antibiotics.

Onychias and paronychias, as well as the characteristic soggy dermatitis in the webs of the fingers (erosio interdigitalis blastomycetica), result from work requiring constant contact with water. As mentioned previously, perleche, too, is caused by constant moisture at the angles of the mouth.

A point that should be stressed is the very frequent association of diabetes and monilial infections. The relationship is common enough to warrant studies to rule out diabetes in all suspected cases of moniliasis, and this is especially true when the skin affection is pustular and secondarily infected. In the event diabetes does exist no amount of local treatment alone will eradicate the associated skin disease, but treatment of the diabetes will clear up the skin in a specific manner whether or not local treatment is used. So patients with monilial infections should be examined first and foremost for diabetes.

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ORTHOPEDIC CARE OF THE WAR WOUNDED *

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LAFAYETTE

The Korean theater was in many respects unusual, to say the least. It provided a never ending work load, but one that was not overpowering. It presented vast numbers of troops of various nationalities with no common tongue, all of whom required treatment at American installations. It was also unusual insofar as the swiftness of evacuation to where definitive or intermediate treatment could be started, as well as the employment of procedures which were ordinarily thought of as being reserved for general hospitals in the United States; and finally, in the return to duty within a relatively short period of time of men with injuries who are usually thought of as being incapacitated for long periods of time.

The chain of evacuation employed in Korea was essentially that used during World War II. The casualty after reaching the battalion aid station was taken to a clearing station, usually by motor vehicle. The more seriously wounded were taken directly from the aid station by helicopter to a MASH installation. It was this one means of transportation that reduced the soldier's chance of dying by about 50 per cent. In other words, if he could reach an aid station alive, his chances from there on were quite good. If he were taken back to clearing because of circumstances and his condition warranted, he was then taken by helicopter to the Mobile Army Surgical Unit.

The MASH was, I am certain, responsible for more lives saved than any other single organization within the Army Medical Service. While originally the MASH was designed, as its name suggests, a mobile unit, the Korean conflict was more or less a static affair insofar as the necessity for moving these installations was concerned. In fact, to the best of my knowledge, during my stay in Japan the MASH's did not move, but in fact had set up in fixed installations. I personally had no argument with any MASH. By and large, the quality of work was excellent. It was, however, interesting to watch the change in attitude from civilian to battle casualty thinking that would slowly but surely evolve as a new group of replacement doctors would arrive. The first two or three dozen casualties that would arrive in Japan were, generally speaking, in poor condition. Debridements were on the timid side. The skin debridement was tremendous, the fascia less so, muscle hardly violated and it was questionable if the bone or other deep structures were even visualized. In order to correct such defects, there was devised, and for some strange reason it worked exceedingly well, a form summary which we in Japan were obliged to complete and return to the installation most concerned with the case at hand. This letter would tell of the condition on arrival and what was done as an

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intermediate or definitive procedure, and most important, what we felt might have been done initially to have simplified or have made further handling easier. While admittedly the last part of the letter was strictly a hindsight proposition, I am sure that it offered some food for thought as it was usually not long after MASH received some of our letters that debridement became more thorough.

The stay within the MASH varied with the case; on the average, one to three days, or as long as ten to fifteen, with more critically wounded. The next stop before Japan was the evacuation hospital. This stop was primarily to await transportataion. Transportation was in all cases by air, except in the rare instance when a U. S. Navy Hospital ship might be in the vicinity and bound for Yokohama. The hospital in which I was stationed for the first twelve months of my tour was a treatment center for the UN casualties and this composed approximately 90 per cent of our patient load. The consternation can be well imagined. The average UN soldier knew no English beyond a few words of nonconversational English picked up from the GI. We, on the other hand, had no knowledge of Greek, Turkish, Thailand, or Ethiopian. The Dutch and French posed less of a problem. Occasionally, we would receive an English speaking Turk, Greek, or Ethiopian and we would usually try to retain him as long as possible. However, out of this confusion we evolved a common language of sorts and this was Japanese. I do not mean that any of us were linguists, but knowing about two dozen words of Japanese and combining these with a pidgin English, plus the occasional word of their native language, an understanding of sorts was achieved. One salvation was that an occasional UN soldier would speak another language, and not infrequently, two or three way conversations were carried on.

The UN soldier was, by and large, an extremely grateful patient, particularly the Turk, Ethiopian, and Thailand. Apparently medical standards in their own countries were somewhat different than ours and everyone taken to surgery with serious or multiple wounds of the extremity fully expected to awaken minus the extremity. The fact that our installation served as a UN hospital certainly made our work more interesting than that of the installation serving American troops. On the average, UN troops were evacuated to their homeland at six months intervals. The Army policy in the Far East was that as much definitive work as possile should be done before evacuation. This policy certainly took some of the sting out of the other policies set up by the Army. However, as all things must end, so did our UN medical status. Various military missions were stationed in Tokyo and protested so much about the 13 kilometer trip to Yokohama that eventually the Tokyo Army Hospital took over our function. As a U. S. Military Hospital, the only thing that changed was that we could understand the language and as there were adequate facilities for treatment within the United States, cases requiring extensive definitive care were evacuated.

The death rate on the battlefield was approximately 20 per cent, only slightly lower than that of World War II. The death rate among the wounded in the hands of the Army Medical Service was down to 2.5 per cent. In an attempt to reduce the battlefield death rate, a team made up of the Quartermaster, Ordinance and Chemical Corps of the Army and the medical service of the Navy, studied some 5,000 cases of killed and wounded over a four months period. The result of this study was, as you are well aware, body armor, first the vest and then the pants. After seeing the beneficial effects of such armor, there were more recent suggestions of extending this armor to include some form of protection for the arms and the legs, areas still extremely vulnerable. While no figures were available to me on the percentage of orthopedic casualties in proportion to the troops involved in combat, I would feel that the percentage was much higher than it was in World War II.

Certainly, the use of body armor made a good many cases orthopedic in nature which would otherwise have been dead because of accompanying chest or abdominal wounds.

The orthopedic management of the wounded had changed materially since World War II. Actually, certain of the changes came about in the normal process expected with certain improved techniques. While the number of people qualified to do orthopedic work was limited, the available men were so placed that the cases came to these hospitals. Finally, because of the predominance of orthopedic casualties, we were permitted to employ so-called radical treatments, not only to speed recovery, but to keep our available bed situation more fluid. For the World War II physician, I will agree that the Korean war was quite limited in scope and that means a good deal, and what I am going to say is in no way derogatory to any member of World War II Service; I am simply explaining what we did.

As previously mentioned, most of our cases were received within one to three days after injury. The debridements were usually adequate. The evacuées were received late in the afternoon and by that evening had been worked up and replacement therapy started. Chemotherapy was routinely started on admission to the wards. All initial dressings were done with doctors, nurses, and corpsmen using caps, masks, and sterile gloves. By the time the patient had been in the hospital approximately twelve hours, he had been examined, dressed, was in traction, and supportive treatment well under way. Generally speaking, within forty-eight hours after arrival the casualty was on a surgery schedule. Approximately 75 per cent of the cases could be given skin coverage without anything but the lightest debridement. Most of the skin coverage was done with split thickness grafts. Yet, if the case called for a pedicle, that was done. As a matter of fact, most of the pedicles were so-called emergencies. As soon as we saw the elbow joint, for instance, completely exposed without the remotest possibility of securing soft tissue coverage from the immediate area, that case was taken to surgery as soon as his condition would warrant. Maybe we were lucky, but we never had occasion to regret this course.

Once soft tissue coverage was secured, the fractures were treated as simple fractures and if open reduction was indicated, that was done. We selected the cases quite carefully and if there was any sign of soft tissue reaction, the treatment was conservative. If an open reduction was elected, we tried to utilize some form of intramedullary fixation. I am certain you are familiar with the femur wards during World War II. We still had the femur wards, but the only cases you would see in traction would be those which had not had internal fixation applied. Most of the cases would come to surgery about three to five weeks after their arrival and bone grafts were done at the same time. By this means, we were returning to duty in the Korean theater, compound fractures of the femur and all within the space of four and one-half to five months. Occasionally a compound fracture, internally fixed, would develop an abscess requiring drainage and might show a persistent drainage for some time. Rather than remove the fixation and go back to conservative traction and treatment, the nail was left in place, the muscles strengthened, the joints mobilized, and the infection treated. In most instances, by persevering, union was eventually achieved and the drainage would cease with the appropriate treatment. The simple fracture was treated definitively shortly after admission and without exception, the man was returned to limited duty in Japan within three months, and usually within six months could be reassigned to the back area in Korea. Simple tibial or ulnar shaft fractures had initial iliac grafts applied with the internal fixation.

We were also permitted, in the Korean theater, to carry out relatively simple and uncomplicated tendon work. In cases of nonunion, where by means of appropriate bone grafts union might be expected with-

in a reasonably short period of time, we carried out such procedures. One of the things that impressed me most was the change in attitude in the cases of severely compounded and comminuted fractures where infection supervened. In the past, emphasis was on conservation of bone. All pieces of reasonable size were cleaned, replaced in the wound with the feeling that such pieces could always be utilized. I do not wish to give the impression that bone was needlessly sacrificed, but in the indicated case, block resections were not too infrequent, but were done when it was apparent that the infection could not be controlled by the usual means, and by permitting it to more or less run its course, would leave an extremity so bound with scar that almost invariably neurovascular changes would result. It was nothing short of miraculous the change that would occur after the block resection and appropriate treatment directed to clean the bed, after which skin coverage was effected. Maintenance of length was no great problem, if the fibula was intact or if it was missing, the bone ends were kept apart by placing a Smith-Peterson nail of appropriate length between the major fragments. In line with the treatment of the compound fractures, it was found that the judicious use of either single or multiple screws to give some degree of stability was definitely advantageous. While such practice was not routine, in the indicated case if it was felt that stability would give much toward soft tissue healing and accordingly, skin coverage, screw fixation was used to immobilize the fragments.

One of the apparent major departures from the routine was in the case of the amputee. In almost all cases, the amputees were retained within our installation until a definitive stump could be made. The only exception was in the case of the partial amputation of the foot, which was treated by split thickness grafts and then evacuated to the United States for either fitting of a prosthesis suitable for the portion of the foot remaining, or for consideration for a Syme's amputation.

These are just a few of the examples of departure from the standard Army procedures. While certain of the procedures might be open to criticism, I personally feel that on the basis of what I have seen, that by and large they contributed much to an earlier rehabilitation of the wounded soldier.

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BODY SECTION RADIOGRAPHY *

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In the past fifteen years body section radiography has become a routine procedure in almost all hospital x-ray departments and almost all private radiographic laboratories in the large cities of the East and West. A great deal of time cannot be devoted here to the history of body section radiography, but it may be mentioned briefly that DesPlantes of Utrecht, and also, Bocage of France, both claim to have invented the method in 1921. Since that time many names and many mechanical appliances have been invented to produce a similar result, (i.e. body section radiography). The most common names in present use for this type of examination are laminagraphy, planigraphy and stratigraphy. The original equipment was hand driven and dangerous to the technician since there was no protection for him. Present apparatus is mechanically and automatically operated by remote control from a control booth.

Body section radiography may be defined as a method of x-ray examination which involves moving the tube in one directon while the film moves in the opposite direction at a proportional rate. The film and the tube rotate about an axis in the plane which it is desired to radiograph. The effect of this is that there is one "layer" or "plane" which is constant in relation to the tube and the film because the movement is in constant ratio and the shadow of every particle in

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that layer will continue to fall on the same point on the film. As the film moves the distance corresponding to the movement of the shadows of the points in that plane points above and below that plane will fall on different parts of the film and consequently become blurred. This can be illustrated by Figure 1. Note that

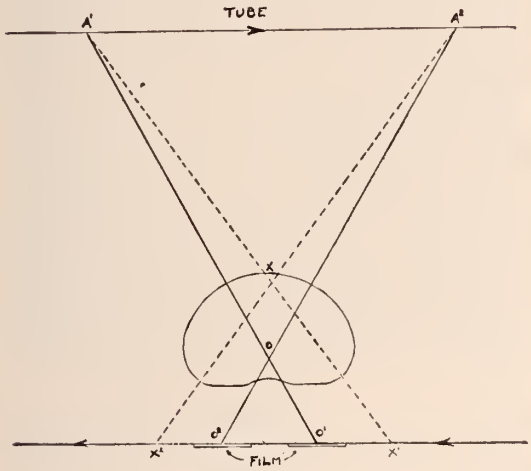


Figure 1

the unbroken line represents only the central ray from the tube that is going through Point O. Also note that the central ray starts and ends in the same position on the film. Any other plane is blurred because the central ray from the other planes will fall on different parts of the film. Point X illustrates a plane off of the focal plane. Figure 2 is a photograph of the equipment we use to take body section radiographs.

The object of body section radiography is to clarify the detail of certain structures of the body which are difficult to demonstrate due to overlying and underlying structures (such structures as sternum and temporomandibular joints). It is also useful in separating layers of pathology and determining depth of lesions.

Body section radiographs will not replace conventional radiographs. They, however, in many cases give added information and in some cases information unobtainable by conventional radiographs. Due to the length of time that it takes to produce body section radiographs it is necessary that the patient is in sufficiently



Figure 2

good condition to co-operate fully. I have selected a few cases in which I think body section radiography has added considerable information over and above routine radiographs:

The first case I wish to illustrate is of a male, age 54, whose complaint was hoarseness. He had been examined by an otolaryngologist who noted some thickening of the right vocal cord and referred him to us for stratigraphs. Figure 3 illustrates a stratigraphic cut taken 7 cm. from the posterior wall of the neck in the region of the larynx. Note that this cut is taken through the middle of the trachea and through the midportion of the larynx. There is a small polypoid lesion which extends into the air filled portion of the larynx. Also note that the cervical vertebrae and other dense structures of the neck are not seen in this film. This lesion was removed surgically and the patient is now living and well.

The second case I wish to demonstrate is that of a male, age 24, who was in an



Figure 3

automobile accident in which he was thrown forcibly against the steering wheel. Routine x-rays at a local hospital failed to reveal any evidence of fracture. However, the patient continued to have pain over the sternum and the patient's physician felt that he had a fracture of the sternum. He was sent to us for stratigraphs and Figure 4 illustrates a lateral



Figure 4

stratigraph of the sternum taken 7 cm. from the right chest wall. A fracture through the upper third of the sternum can clearly be seen in this film. Note that only the sternum is visible in this plane.

Figure 5 shows a body section radio-



Figure 5

graph of a normal temporomandibular joint and also illustrates other structures in the same plane, such as the ramus of the mandible and mastoid. Note that the overlying bone of the skull and the opposite jaw, as well as the cervical vertebrae, are not visible on this film. These latter structures frequently blur this plane in normal radiographs.

Figure 6 (stratigraph cut at 8 cm. from



Figure 6

posterior wall of the mediastinal portion of the chest) illustrates a patient with untreated Hodgkin's disease and with early bilateral hilar involvement. Note the "grape-like" hilar lymph glands enlarge-

ment and their relationship to the right and left bronchi.

Figure 7 (stratigraph cut 13 cm. from

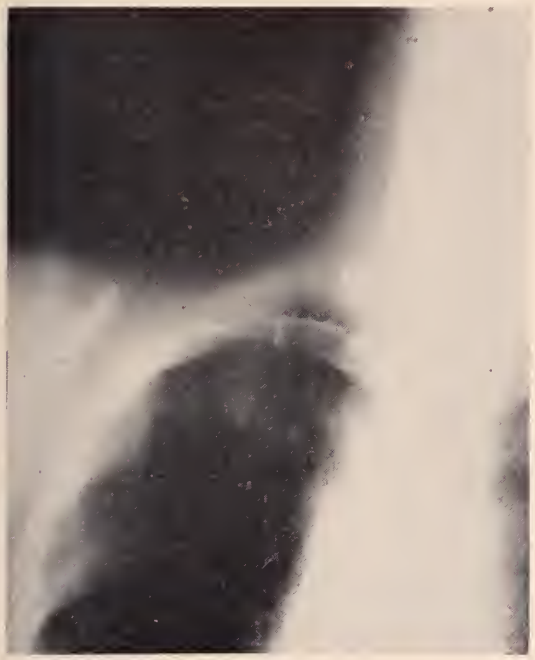


Figure 7

posterior wall of the chest in the region of the left apex) shows 3 small cavities which were obscured in conventional films by the first rib. This patient has com-



Figure 8

plained of intermittent hematemesis over the past eight months.

Figure 8 (stratigraph cut 13 cm. from posterior wall of the chest in the region of the left hilum) reveals the left bronchus to be occluded by bronchogenic carcinoma. Patient went to surgery and a bronchogenic carcinoma was successfully removed.

Figure 9 (stratigraph cut 4 cm. from



Figure 9

the posterior wall of the pelvis at the lumbo-sacral joint) shows destruction of the left half of the medullary portion of the first sacral segment and a portion of the left wing of the ilium. Ordinary radiographs of this region failed to reveal any visible pathology because the cortex of these bones were not involved.

Figure 10 (stratigraph of the left apex cut 8½ cm. from the posterior wall of the chest): Note thick-walled cavity and bronchiectatic changes. This was a film of a male, age 41, who was a very active business man and who had an ordinary chest film taken as part of an annual physical examination and fibrotic and possible areas of cavitation were reported by a radiologist. This man was of the type who wanted confirmation of these findings and went to three other radiological



Figure 10

laboratories and received various impressions. The reason for the various impressions was that in some chest films the cavity was hidden by the first rib and the only pathology seen appeared to be fibrotic. Stratigraphs proved this cavity to be 2.5 cm. in depth. On the basis of the stratigraphs this man retired from work for one year and is now back at work for the past five years and apparently well.

To sum up the values of body section radiography, I wish to emphasize that in all of my enthusiasm for this form of x-ray examination I do not want to leave you with the impression that stratigraphs will replace ordinary x-rays. They will, however, be used to verify and clarify information found in ordinary radiographs.

Note: Definition of body section radiography adapted from *Manual of Tomography* by Maurice Weinbren, 1948, Charles C Thomas, Publisher, Springfield, Illinois.

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THE NONSURGICAL MORTALITY OF ACUTE APPENDICITIS*†

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NEW ORLEANS

Between April 1, 1930, and December 31, 1953, 535 persons died of acute appendicitis in Charity Hospital of Louisiana at New Orleans. Of that number 183, slightly more than a third, died without benefit of surgery. Of the 183, 53, or 29 per cent, were admitted moribund.

The surgical case fatality rate in acute appendicitis has steadily decreased for many years. In the last series of surgical cases which I studied in detail and which occurred during the four-year period ending in 1949, the case fatality rate had fallen to 1.7 per cent. According to the hospital records, which I have not analyzed in detail, it was even lower approximately 1 per cent, for the four-year period ending in 1953. But during this eight-year period, when there were only 32 surgical deaths in 2,442 surgical cases, there were 25 nonsurgical deaths. Ten of these 25 patients died within twenty-four hours of admission, in one instance within thirty-five minutes, and in another within two hours. In the light of these facts, as Rees[1] has recently expressed it, acute appendicitis is still in greater need of attention than "other and more publicised methods of dying."

The nonsurgical mortality of acute appendicitis may be approached from several points of view: (1) expectant treatment, which is an argument of long standing; (2) antibiotic therapy, which has become a risk—the nomenclature is deliberate—only during the last several years; (3) diagnostic error, which has existed as long as the disease has been recognized but the magnitude of which is still not appreciated; (4) the responsibility for these deaths, which is often compound.

ANTIBIOTIC THERAPY

Since patients with acute appendicitis now stand in real therapeutic danger from the misuse of the antibiotics, let me begin my discussion from that point of view. The following histories, both of which concern nonfatal cases, will show, I think, that the implications of the statement which I have just made are correct:

Case No. 1. A 7 year old negro girl came to the hospital, on the advice of her local physician, twenty-four hours after she had begun to suffer from paraumbilical pain, nausea, vomiting, diarrhea and chills. She had been given a purgative. She was refused admission but was given a pre-

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scription, apparently for a sulfa drug, to take five times daily. Four days later the patient was brought back to the hospital. Pain and tenderness were now localized in the right lower quadrant. Further examination, after a dose of amytal had taken effect, revealed a mass in the same area. A diagnosis of appendiceal abscess was made and an excellent peritonitis regimen was instituted, supplemented by all the antibiotics then available (penicillin, streptomycin and aureomycin) plus a sulfa drug. The child came very close to death, but at the end of sixty-three days she was sufficiently recovered to undergo appendectomy. She was discharged in good condition five days later.

Case No. 2. A 12 year old negro girl was admitted to the hospital ten days after the onset of vomiting apparently precipitated by the ingestion of raw bacon. Soon afterwards paraumbilical pain ensued. Later it localized in the right lower quadrant. A physician who was consulted on the third day of the illness prescribed a sulfa drug. The girl's condition became progressively worse and a second physician, who saw her on the tenth day of illness, made a diagnosis of rupture of the appendix and sent her to Charity Hospital. Her temperature at this time was 103.4° F. and her pulse 124. Examination revealed abdominal distention, tenderness in both lower quadrants, and rigidity in the right lower quadrant, where a mass was palpable.

Surgery was limited to incision and drainage, no search being made for the appendix. An excellent peritonitis regimen was instituted, supplemented by penicillin. This drug was replaced by streptomycin after angioneurotic edema appeared and the patient went into a state resembling shock. On the eighteenth day of hospitalization an abscess of the abdominal wall was drained. Later, a secondary drainage operation was necessary because of prevesical and intraabdominal extension of this abscess. Still later, on two occasions, the subphrenic space was drained. Repeated transfusions were required and bacitracin was added to the regimen. Altogether, this child spent sixty-five days in the hospital, and, like the first patient, she came very close to death.

These cases need no extended discussion. It seems perfectly fair to say that the first patient would have been spared a long illness that was almost mortal if (1) she had been admitted to the hospital when her physician sent her there or (2) incision and drainage had been performed when she returned four days later. The hospital also would have been saved many stay days, a great deal of medical and nursing effort, and the expense of the antibiotics, some of them then very costly, which were used over an extended period of time. Combined antibiotic therapy has its place, but, as Pulaski[2] has stressed, the evidence for it is still conflicting and the use of all the drugs which happen to be available is completely without reason and may be dangerous.

The second patient was in fairly good condition when she was finally discharged, but her appendix was still in situ, in spite of the series of operations which she had undergone, and at the end of four years she has not yet returned to have it removed. Her treatment in the hospital, by incision and drainage, was perfectly sound, in view of her condition on admission, but she had been put in that grave condition because she was given a sulfa drug instead of surgical therapy when she was seen by a physician on the third day of her illness. She is still in jeopardy of her life, for she still retains a potentially lethal organ.

Otologists have begun to use rather strong language about the type of conductive deafness in childhood which is now one of their major problems and which is produced by the treatment of otitis media by antibiotics instead of on established surgical principles, that is, by myringotomy and evacuation of the exudate. Surgeons are rapidly encountering a similar problem, as these two case histories show. They are being called upon to treat the therapeutic complications of acute appendicitis in mortally ill patients, the opportunity having passed to perform simple appendectomy on good-risk patients. It is, of course, one of the paradoxes of this curious situation that many of these patients, like the two just described, owe their survival, at least in part, to the very antibiotics which have brought them to their present state.

In 1950, a professor of medicine at one of the leading medical schools of the country, a man who certainly should know better, made the major error of including acute appendicitis in a book dealing with the medical management of gastrointestinal disorders. He compounded the error by stating that with "increasing knowledge of the efficacy of the sulfonamides

and antibiotics, the question arises whether all patients with acute appendicitis require immediate surgical intervention." Curiously, the author then goes on to say that the development of an abscess in the right lower quadrant of the abdomen is an indication for surgery. I heartily agree with him, but some of my betters would say that he was on debatable ground.

The error in this 1950 text has been duplicated many times over in the periodical literature. On the other hand, numerous articles have been published to show the dangerous and sometimes fatal results which may occur when the antibiotics are substituted for surgery in acute appendicitis and other surgical conditions.

A sort of reverse error has also crept into the medical literature, in which much of the attention is now devoted to the complications of acute appendicitis and the miracles which can be brought about in them by the new drugs. Very little attention is paid to the desirability of controlling the uncomplicated disease by surgery, with no antibiotics at all. Journals devoted to internal medicine seldom publish anything at all on acute appendicitis. The *Journal of the American Medical Association*, which has the largest professional circulation in the world, has paid editorial tribute to the use of the antibiotics in appendicular peritonitis and has published articles on the complications of acute appendicitis. It has not published an article on acute appendicitis as such in more than 10 years and my own attempt to rectify the situation was turned down with unflattering promptness.

One of the very considerable dangers in this connection is that lay persons are beginning to believe that antibiotics are a substitute for appendectomy. More than once, in the last year or two, I have had to speak very bluntly to patients, or to the parents of young children, who clung to this idea. The public can scarcely be blamed. Three times within less than a year a syndicated medical columnist has indicated that appendicitis is no longer a dangerous disease and that antibiotic therapy is an alternative to surgery. When an article in the newspaper is entitled "Appendicitis. Surgery or Antibiotics?" the fact that a few laudatory things are said about operation in the course of it does not undo the harm done by such a heading or by the concepts it suggests.

I should be less than just if I did not say that another syndicated medical columnist, Dr. Edwin P. Jordan, having read some remarks I had made in this matter, sent me a column of his own in which acute appendicitis is discussed with clarity and soundness. Its tricky nature is emphasized, as are the dangers of delayed diagnosis, the importance of consulting a physician promptly for abdominal pain, the necessity for prompt operation, and the dangers of cathartics. In the whole article there is not a word about the antibiotic therapy of acute appendicitis, as there should not be.

Antibiotics are not a substitute for surgery in this disease. Their use for that purpose accounted in large part for at least 10 of the 183 nonsurgical deaths at the New Orleans Charity Hospital, all of these fatalities, of course, occurring within the last decade. Outside physicians were practically always responsible for the incorrect management. Numerous other cases, like the two whose histories I have related, testify to the unwisdom of this new method. When antibiotic therapy is employed as a substitute for surgery, the patient is subjected to a gamble which does not always pay off. When it does, he would probably have recovered just as promptly if it had been omitted.

DIAGNOSTIC ERROR

In 92 of the 183 nonsurgical deaths which form the background of this paper the diagnosis was confirmed by postmortem. In a number of instances autopsy first revealed the nature of the condition present. In the remaining 91 cases the diagnosis was made clinically. If there are any deaths in this series which were not due to acute appendicitis, I am certain that they will be more than com-

pensated for by the cases of acute appendicitis signed out under some other diagnosis because, as in many of the confirmed cases, the manifestations were entirely atypical.

I have long believed that failure to appreciate the atypical character of many cases of acute appendicitis is responsible for a major portion of its continuing mortality.[3] This is particularly true of patients in the upper age group.[4] Many of the histories in this series are incomplete, because of the serious state of so many of the patients on admission, but the proof of my contention is nonetheless perfectly clear.

The initial symptoms often did not follow the classical pattern (Figure 1) and

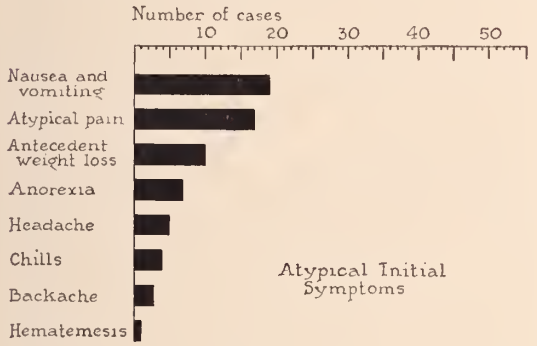


Figure 1

were sometimes extremely misleading. One would not, for instance, think of an acute inflammatory disease when, as happened in 10 cases in this series, the illness was preceded by a loss of weight which was sometimes considerable. Not surprisingly, malignant disease was suspected in a number of these cases, and one patient died in the course of preparation for operation on a presumed carcinoma of the cecum.

In a number of cases the illness began according to the classical pattern, with abdominal pain, but the course thereafter was entirely atypical (Figure 2). Pain, for instance, was on the left side in 5 cases, on both sides in 3 cases, and in the right shoulder in 1 case. In 2 instances, both in older persons, it was vague throughout the illness. In 14 cases, cessation of pain, which proved only temporary,

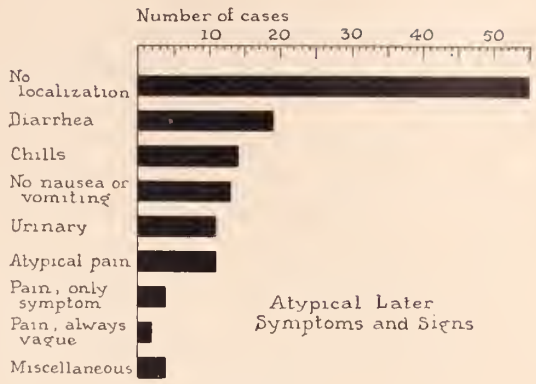


Figure 2

misled the patient, the outside physician, the physicians in the hospital, or all of them. An unusually large proportion of patients had urinary symptoms, diarrhea or chills. The absence of localization and the absence of nausea and vomiting increased the diagnostic confusion in a great many cases.

Distention is a frequent and not generally appreciated finding in acute appendicitis in older patients. That was true in this series, though in many of the 65 instances in which it was present in this series it was an index of the late stage of the disease. A similar explanation holds for the large number of cases in which dehydration, toxemia, fluid levels, a silent abdomen, jaundice, delirium and coma were present. As in all acute appendicitis, the temperature and pulse ranged widely, as did the white blood cell count and the percentage of polymorphonuclear leukocytes.

In a number of cases (Table 1) the appendiceal disease had its onset in the course of some other disease or condition. In one case, apparently of traumatic origin, the symptoms ensued shortly after an automobile accident. In another case symptoms began shortly after the bite of a black widow spider. The history could not have been more typical. The patient was treated for arachnoidism and the autopsy was scheduled as a demonstration of the condition and was widely attended. It revealed a ruptured appendix with ascending pylephlebitis. It was one of the most surprising autopsies I have ever

TABLE 1
ASSOCIATED DISEASES AND CONDITIONS

NUMBER OF CASES	ASSOCIATED DISEASE OR CONDITION
15	Obesity
11	Cardiac disease
10	Ascariasis
8	Renal disease
6	Hypertension
5	Diabetes
4	Typhoid
4	Measles
3	Pelvic inflammatory disease
1 each	Tuberculosis, serous cystadenoma of ovary, brain tumor, lymphogranuloma inguinale, carcinoma of lung, puerperium, fracture of femur, urethritis, cholecystitis, pneumonia, black widow spider bite, automobile accident

witnessed, and the most astute physician could scarcely have made the diagnosis antemortem.

A number of these patients had chronic diseases, upon which all the attention was centered. In 2 cases the diagnostic error made small difference, since 1 patient was mortally ill with carcinoma of the lung, and the other with serous cystadenoma of the ovary. Some of the others might have been saved if it had been remembered that because of its extreme frequency acute appendicitis very often occurs in patients ill with other conditions.

Incidentally, obesity is not, of course, a disease, nor is it related in any way to acute appendicitis. It does, however, increase the difficulty of diagnosis, for obvious reasons, and it increases the death rate. In the surgical series the mortality in obese patients was almost 19 per cent.

Nine of these cases illustrate a special and peculiar danger not limited to acute appendicitis. It is, as a number of observers have pointed out, that the most unsafe possible place in which to develop an acute abdominal condition is in the hospital, while under treatment for another condition. One of these 9 patients had been hospitalized for years for tuberculosis and another for months for decompensated cardiac disease. In neither instance was acute appendicitis suspected until it was revealed at autopsy. One patient was being prepared for surgery for a brain tumor. Another had a fractured femur. The others had, respectively, biliary tract disease, lymphogranuloma inguinale, diabetes, and pneumonia. If acute appendicitis was diagnosed at all, the recognition came too late to save the patient.

In 17 cases the onset of symptoms occurred immediately after food had been taken, often to excess and unwisely. Certainly no blame can be attached to physicians who treat children for supposed dietary disturbances after they have gorged themselves on apricots, as one of these children did, or have chewed up camphor balls and swallowed them, as another young child did. The clinical picture was equally misleading in a number of adults who had consumed rich, mixed foods, sometimes at midnight, or who became ill immediately after drinking sprees.

The diagnoses advanced in these cases (Table 2) illustrate perfectly how perplexing acute appendicitis can be. The list gives rise to a number of interesting considerations: (1) the range of the diagnoses; (2) how reasonable many of the diagnoses seem in the light of the history, physical findings, and clinical course; (3) the fact that the chief diagnostic confusion was, as always, in the older patients, for whom,

TABLE 2
DIAGNOSTIC ERROR IN 183 FATAL CASES OF ACUTE APPENDICITIS

NUMBER OF CASES	DIAGNOSIS
15	Intestinal obstruction
14	Renal, various
11	Peptic ulcer (9 ruptured)
10	Pneumonia
9	Peritonitis of ? origin
9	Carcinoma (intestine 7, stomach 2)
7	Biliary tract disease
7	Cardiac, various
3 each	Mesenteric thrombosis, pancreatitis
2 each	Typhoid, neurologic, non-acute appendicitis, gynecologic, pyrexia of ? origin
1 each	Gastroenteritis, bacillary dysentery, arachnoidism, anemia, toxemia, ruptured viscus

as Wolff and Hindman[5] have said, it might be well to set up new diagnostic criteria for the disease; (4) how often in this series acute appendicitis, although the most frequent of all abdominal diseases, was not only not listed as the chief diagnosis but was not listed at all.

CONSERVATIVE (EXPECTANT) TREATMENT

Conservative (expectant) therapy was carried out in 70 cases in this series. Two patients refused surgery. Eleven others were in such serious condition on admission that they were entirely unfit for surgery. In the other 57 cases the choice was deliberate. These 70 cases are exclusive of the 53 cases in which the patients were admitted moribund and died within twenty-four hours.

The arguments against expectant treatment in acute appendicitis may be summed up about as follows:

1. The diagnosis of acute appendicitis is notoriously inaccurate. A palpable mass may be an appendiceal abscess, but it may also be an unruptured appendix surrounded by omentum. Furthermore, an appendiceal abscess may exist without an evident mass. When the appendix is retrocecal or pelvic, the abscess may not be palpable at all. It was not in 2 of the 21 fatal abscesses in this series.

2. It is frequently impossible to determine whether a peritoneal infection is localizing or spreading. This is particularly true since antibiotic therapy has been employed. As has already been pointed out, this form of management may control the clinical manifestations of the disease while at the same time it masks a continuing pathologic process.

3. Rupture of an appendiceal abscess under conservative management is entirely possible and may be fatal. Six of these 183 deaths occurred for this reason. In one instance rupture occurred twenty-four hours after the patient had been admitted, and a large mass previously present disappeared with dramatic suddenness. In two other instances the patients, both children, merely turned over in bed before the accident occurred.

4. It is unsafe to let an infectious process continue unchecked. In one of these cases, in which death occurred on the thirty-second day of hospitalization, autopsy showed pus still dripping into the abdomen from the ruptured appendix.

5. Results achieved by conservative therapy are no better than those achieved by prompt surgery supplemented, in complicated cases, by proper adjunctive therapy. In many respects they are not as good because the cases in which this method is used are frequently less serious, as I shall point out shortly, than the cases in which surgery is employed. As a matter of fact, the more competent the surgeon who chooses to use this method, the more selective is the series. I might also say at this point that in all of the later cases in this series of fatalities in which conservative therapy was employed, the regimen was excellent. One may question the wisdom of the choice of therapy but almost never the efficiency with which it was carried out.

So much for the arguments against conservative therapy. One other argument presents itself against it in this special series. Acute appendicitis cannot be treated according to a time table, but even the most ardent advocates of conservative therapy do not ordinarily advise it in early cases. When patients are seen within twelve hours and twenty-four hours and forty-eight hours of the onset of their illness, it is hard to conceive of circumstances which would contraindicate surgery and justify conservative therapy. In most of these early cases antibiotic therapy was part of the regimen, and enough has already been said about the unwisdom of that course of action.

Let me approach conservative therapy in another way. Between 1945 and 1949, when 1,172 patients with acute appendicitis were treated surgically at the New Orleans Charity Hospital,[6] with 20 deaths, 60 were treated conservatively, with 7 fatalities. Two of the 53 survivors refused surgery and 1 of them was critically ill when he left the hospital, against advice. Another patient was a hemophiliac and conservative therapy was, of course,

soundly based in this case. Certain disturbing considerations, however, emerge from an analysis of the other 50 cases:

In 6 cases the duration of illness when conservative therapy was selected was less than forty-eight hours. However one may feel about this method, this is a completely illogical application of it.

In 15 cases the period of hospitalization was less than ten days. One of these patients was discharged on the fifth day. I find it hard to believe that patients whose period of hospitalization was so brief were ever very ill.

Four patients underwent appendectomy before they left the hospital and recovered uneventfully. Whatever their future may hold, it does not include another attack of acute appendicitis.

Twenty-six of the remaining 46 patients did as they were told and returned for operation, though 5 of them did not follow instructions until they were jarred into action by another attack of acute appendicitis. Another patient had a recurrence on the ward, while awaiting operation. All recoveries were uneventful.

The other 20 patients have not yet returned for appendectomy. Among them is the patient whose case history was related earlier and who survived a series of operations for the complications of acute appendicitis while still retaining her appendix in situ. Sixteen of these 20 patients were between 40 and 77 years of age, a period of life in which acute appendicitis is peculiarly dangerous and in which expectant treatment is attended with peculiar risks. Eight of the 16 live out of the city and out of immediate reach of hospital facilities. All 20 of these recalcitrant patients represent one of the greatest disadvantages of expectant therapy in acute appendicitis.

Twelve other patients observed in the 1946-1949 period were treated by incision and drainage, which, under the circumstances, was entirely proper and probably lifesaving. When they were discharged, one was told that he need return only if his side troubled him and another that he need not return at all since the mass in his side had disappeared. Such advice seems singularly light-hearted in view of what happened to 3 of the 9 patients who followed instructions and returned for surgery, though not always promptly. All 3 had recurrent attacks. One was operated on while the inflammation was still confined to the appendix. The second patient had a second rupture. The third delayed three days after the onset of the recurrent attack, took a purgative, and returned with a ruptured and gangrenous appendix. In our surgical series of cases are the records of 33 other patients, also treated by incision and drainage and also advised to return for appendectomy. All of them eventually returned, but 5 of them lost their lives in recurrent attacks because they did not accept interval appendectomy.

For that matter, 19 of the 183 patients in this series of fatalities had had previous attacks which they had survived without surgery. In the 7,613 surgical cases studied in detail from the New Orleans Charity Hospital there were 44 deaths in patients who had survived previous attacks. Such fatalities always seem particularly unnecessary and distressing. The patient who has survived an acute attack of appendicitis without surgery should be warned of the possibility of recurrence and should be advised not to take camping, hunting, or fishing trips or to visit remote places where a physician would not be readily available. I doubt that prophylactic appendectomy ever will, or should, become the general practice, but physicians who are interested in acute appendicitis must feel a certain sympathy for General Eisenhower's conduct. You will remember that he took advantage of a quiet interval in his busy life to have his symptomless appendix removed. The columnists and commentators who are always in a state of gloom about the state of his health have at least one illness which they need not fear for him.

ASSIGNMENT OF RESPONSIBILITY

The assignment of responsibility for these 183 nonsurgical fatalities in most

instances can be only approximate (Figure 3). The hospital, naturally, cannot be

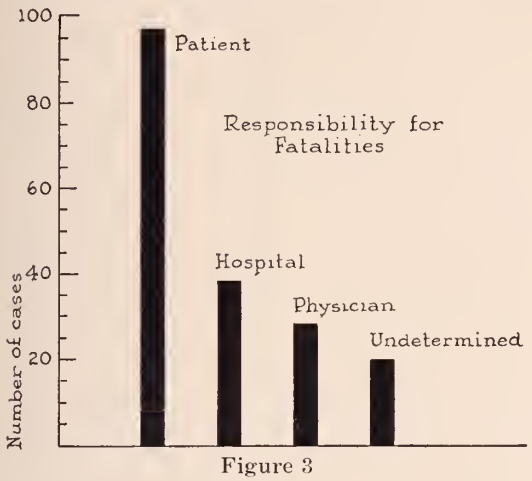


Figure 3

charged with the responsibility for the 53 patients who were moribund on admission, but in 38 other cases diagnostic efforts might have been more vigorous and the management perhaps wiser. In at least 28 cases—the number would undoubtedly have been greater if the records had been more complete—the fatalities must be charged to physicians who ordered purgatives for abdominal pain or who gave antibiotics and did not advise hospitalization for a disease that is essentially surgical. In 20 cases it was impossible to determine where the fault lay. In the remaining 97 cases the patients themselves were chiefly to blame for their fate. Seventy-eight of them took purgatives, 47 of them repeated them, and all of them delayed seeking medical aid until it was too late to save their lives.

In one sense the profession has no responsibility for these 97 deaths or for the 53 deaths in the patients who were admitted moribund. In another sense it cannot escape the onus for them. There is something the matter with our health education when patients are still taking purgatives for abdominal pain and are failing to seek prompt medical aid for it. Some of these cases go back more than twenty years, it is true, but 7 of the 25 patients observed in the 1946-1953 period took purgatives and 3 of them repeated them. In 12 of the 183 cases the purgatives were ordered by physicians, but this happened only once in the last years of this study. This was the time, however, when antibiotic therapy was sometimes used so unwisely and when some of the patients who entered the hospital moribund or who died later lost their lives through misuse of the very drugs that have saved so many lives.

THE SOLUTION OF THE PROBLEM

Every one of these 183 patients ultimately died of advanced acute appendicitis, even the 9 who died, variously, of cardiac disease, uremia, and pneumonia. Almost all of them could have been saved if they had sought medical care early enough or if they had been promptly hospitalized when they were first seen by physicians. Surgery is still the accepted treatment in acute appendicitis. Expectant therapy, if it is used, is a compromise. Efficient antibiotic therapy is an adjunct measure, not a primary treatment. Every case in this series well illustrates the everlasting wisdom of John B. Murphy's dictum, that when the patient is first seen, then is the acceptable day of salvation and then is also the time for removing the appendix.

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The Journal *does not hold itself responsible for statements made by any contributor.*

ONLY PHYSICIANS SHOULD PRACTICE MEDICINE

The statement that only physicians should practice medicine may seem axiomatic. However, in view of the present trends, the basis for this established principle should be restated, and its application to the problems facing organized medicine should be clearly understood.

Governmental regulations which have a bearing on the fact that proper qualifications should be held by those who strive to help the sick go back into the night of time. In the code of Hammurabi, thousands of years ago, statements are made as to the proper qualifications of a physician. The social wisdom of such laws shows in the jurisprudence of many nations, and in our own it shows in the elaborate arrangements for adequate medical education existing about us and in the praiseworthy operation of the system of licensing boards in our several states. Similar boards are in many nations. In the past century, the base of the pyramid that we know as medicine has become vastly broadened in the field of knowledge and of technical skills. All sciences have facets which support the stones of medicine. As those who have such knowledge or skills become proficient in their respective field, they desire to function independently of the supervision and direction of physicians. It is at this point that the question of acceptance or permission develops, and it is here that the decisions of the physicians as individuals and as a group must be made.

One phase of the problem is the controversy of the hospital practice of medicine. Another aspect is one which tends to go relatively unnoticed, and is that which pertains to the individuals with specialized training but without medical degrees or license to practice medicine. Many of these wish to care for patients who may be referred by physicians or other patients but their legal and moral responsibility is not covered by a physician's supervision. In this group may be, as individuals or groups, physiotherapists, psychologists, medical technicians, electrical technicians. In many instances, they seek to build individual practices and to secure a governmental license to operate as such. The State license so secured may serve as a cloak of approval or proficiency and acceptance so far as the public is concerned. Those who advocate such a plan point to the value of adequate regulation. This, however, does not offset the disadvantages which may accrue, no matter how restrictive and rigid the initial regulations may be. The tendency would be, in a few decades, to expand the scope of practice

and later the legal limits of practice in each of these fields. The next step is that many individuals would be practicing medicine whose outlook, training, and responsibility are technical only. This is the equivalent to having standards of education for the practice of medicine lowered to the degree that the technical licensing boards may choose. It is obvious at this point that this is just the opposite goal to that toward which organized medicine has been striving for generations.

The principles of medical ethics of the American Medical Association state that the physician is expected to exalt the standards of his profession and to extend its sphere of usefulness. He is expected to uphold the dignity and honor of his vocation. He should aid and safeguard the profession against admission to it of those who are deficient in moral character or education. The principles of ethics of the American Medical Association embody the most constructive, high minded, and ethical thought available to guide the American physician today. The practical application of these principles to the problems stated above is that the efforts of organized medicine should be supported in opposing legislation leading to the licensing of these practitioners on the fringe of medicine. The physician should go further than this. In the conduct of his own practice he should himself avoid referring patients to individuals in these respective fields who are not functioning under the immediate supervision of a physician. In referring patients for out-patient attention in hospitals, they should be referred to the physician head of the department, and not to the hospital as such.

By the observance of such principles and precautions they may avoid the building up of a wave of demand for limited licensure and promote the solidarity within our own profession which is necessary for the maintenance of our own standards and ideals.

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ORGANIZATION SECTION

The Executive Committee dedicates this section to the members of the Louisiana State Medical Society, feeling that a proper discussion of salient issues will contribute to the understanding and fortification of our Society.

An informed profession should be a wise one.

ADDITIONAL APPOINTMENTS

The following appointments have been made by the President of the Society since publication of appointments in the October issue of The Journal.

SPECIAL COMMITTEES

ALCOHOLISM

Robert A. Matthews, M. D., New Orleans, Chairman; M. S. Freiman, M. D. Pineville; Fritz LaCour, M. D., Lake Charles; Kenneth Ritter, M. D., New Orleans.

GERIATRICS

W. L. Kirkpatrick, M. D., Jackson, Chairman; Charles Gowen, M. D., Shreveport; E. M. Robards, M. D., Jackson.

MENTAL HEALTH

Henry Colomb, M. D., New Orleans, Chairman; Barclay Funk, M. D., Lake Charles; D. H. Duncan, M. D., Shreveport.

SECTIONAL CHAIRMEN 1955 ANNUAL MEETING

ALLERGY

H. Whitney Boggs, M. D., Shreveport.

BACTERIOLOGY & PATHOLOGY

Andrew Ranier, M. D., Lake Charles.

DERMATOLOGY

Charles I. Black, M. D., Baton Rouge.

DIABETES

Haydn H. Cutler, M. D., Monroe

GASTROENTEROLOGY

Morgan W. Matthews, M. D., Shreveport.

GENERAL PRACTICE

Janie McSwain Topp, M. D., Lake Charles.

GYNECOLOGY

E. Perry Thomas, M. D., New Orleans.

HEART

J. E. Knighton, M. D., Shreveport.

MEDICINE

Boni J. DeLaureal, M. D., New Orleans.

NEUROPSYCHIATRY

John W. Bick, Jr., M. D., New Orleans.

PEDIATRICS

Clarence H. Webb, M. D., Shreveport.

PUBLIC HEALTH

Ben Freedman, M. D., New Orleans.

RADIOLOGY

Leslie M. Warshaw, M. D., Lake Charles.

SURGERY

H. H. Hardy, M. D., Alexandria.

CHEST

J. Keller Griffith, M. D., Lake Charles.

CLINICAL SESSION AIMED AT ALLEVIATING EVERYDAY MEDICAL PROBLEMS

CHICAGO—Easier solution of medical problems that the family doctor encounters is the general aim of the American Medical Association's clinical meeting in Miami, Nov. 29 through Dec. 2.

More than 100 physicians will present scientific papers or participate in panel discussions during the meeting, directed toward alleviating the everyday medical problems of the physician.

The meetings in Miami's Dinner Key Auditorium and the McAllister Hotel are expected to be attended by more than 3,000 physicians from throughout the nation.

Dr. Thomas G. Hull, Secretary of the A.M.A.'s Council on Scientific Assembly, said "we have attempted to arrange a program of broad general interest rather than one showing merely the results of investigation or experimentation. While various specialties are represented at the meeting, such as medicine, surgery and obstetrics, the program is not for the specialist in these fields, but rather for the general practitioner who also must work in these areas."

The lecture programs will include subjects of broad interest in medicine, surgery, pediatrics, neuropsychiatry, obstetrics and gynecology.

Outstanding medical authorities also will participate in the scientific exhibit where more than 80 displays will be presented.

Leading surgeons and obstetricians will be available at the scientific exhibit for conferences with individual doctors on problems in fractures and deliveries. Doctors are invited to bring x-rays of fracture cases they wish to discuss. The obstetrical section will include manikin demonstrations of deliveries.

Another section of the meeting, the technical exhibit, will have more than 130 drug, medical equipment and pharmaceutical manufacturers, food processors, medical book publishers and other commercial organizations participating.

Motion pictures will be shown continuously during the meeting and a special filming will be presented on Tuesday evening, Nov. 30, in the McAllister Hotel. This will be the premiere showing of two outstanding films—"Lung Cancer: The Problems of Early Diagnosis", sponsored by the American Cancer Society, and "Differential Diagnosis of the Arthritides", by Dr. William B. Rawls, New York.

Closed-circuit color television again will be shown to doctors attending the clinical session through the sponsorship of Smith, Kline and French Laboratories. Programs originating from Miami's Jackson Memorial Hospital will be brought directly into the lecture hall.

The House of Delegates, the policy-making body of the A.M.A., will hold its sessions in the McAllister Hotel.

KEEP HEALTH INSURANCE VOLUNTARY

On the basis of a great deal of additional information given to us by the insurance industry, we are compelled to reverse our past position favoring the Eisenhower administration's health reinsurance program.

During the past few years several insurance companies have entered the field of catastrophic insurance and now supply policies that cover extraordinary medical expenses at a reasonable cost which the average citizen can pay. Mr. E. A. McCord, president of the Illinois Mutual Casualty Company, has pointed out that his company, for instance, provides catastrophic insurance to cover expenses up to $10,000. It is possible for a man and wife in their 40s with three or more children to get coverage for medical expenses up to $5,000 for as little as $93 a year or $8 a month. Of course the first $500 of such a catastrophic expense is deductible and must be paid by the insured person.

Mr. McCord also pointed out that this type of catastrophic insurance is now being written by the insurance industry largely without any private re-insurance program. The capacity of the industry as a whole to provide this kind of insurance is great and there is no need for the proposed $25,000,000 government fund for this purpose.

Certainly there is a widespread misconception in the United States, which we ourselves have shared, that the insurance industry has been either unwilling or unable to provide reasonably priced catastrophic insurance. It has undoubtedly been spread by the strenuous and effective efforts of those favoring a government-controlled health program. The insurance industry's own failure extensively to dramatize its contributions and to capitalize on them with the public is also responsible.

As we have stated repeatedly in the past, it is a sound principle of government that government should never invade a social welfare field in which private or semi-public agencies are able and willing to provide what is needed. It seems clear that the insurance industry has the capacity and is now showing the willingness to handle this special and long neglected field of catastrophic health insurance.

The best way to prevent socialized medicine or socialized insurance is to eliminate, through private effort, any need or demand for them and to do so before government gets started in the field. The Eisenhower administration can hardly claim a need for government action if the insurance industry has already taken action without government help. And surely if the insurance industry is successful in selling its catastrophic insurance plans on a voluntary basis to the majority of

Americans, there will no longer be any reasonable demand for government action. We hope that happens.

Editorial — *The Indianapolis Star*, September 25, 1954.

NATIONAL DIABETES DETECTION WEEK

The week of November 14-20 will be National Diabetes Detection Week. The necessity of recognizing the fact that a large number of diabetics remain undetected will be brought to the attention of the public and of the profession by means of an educational program. In a number of communities the opportunity to have urines tested will be offered to the public. The program in New Orleans and in Louisiana will be purely "educational" this year. It is hoped that with the cooperation of the profession and of other groups the observation of Diabetes Detection Week in New Orleans will be accompanied by a testing program in 1955. This matter will be brought before the Parish Medical Societies so that plans may be made.

The early recognition of diabetes mellitus at any age is important because it is felt that the diabetic under control can live a normal life. On the other hand the diabetic who does not even know that he has diabetes is in danger in many ways.

The work which is being done for the 1954 Diabetic Detection Campaign is in the hands of members of the National Committees of the American Diabetes Association and of the Parish and State Societies.

THE LOUISIANA HEALTH COUNCIL

The annual meeting of the Health Council will be held in Monroe, Louisiana, November 11 and 12. There will be represented at this meeting 16 organizations from the state having direct relationships with the promotion of health and health education in Louisiana. Every phase of health will be discussed by outstanding members of the groups who are responsible for their roles in health and health promotion activities. There will be recognized leaders from national organizations, including representatives from the American Medical Association and the National Council on Rural Health, and this promises to be a most interesting and instructive meeting.

More of our doctors should become members of the Council and join hands with those who are working so hard to promote a good health program for our people. Won't more of you members come to the meeting, thus indicating your interest in the health and welfare of our people? The organization needs you and your support in this grand undertaking for the betterment of health conditions in our State. Don't let our school children down. They will be our future citizens within a few years and will hold us responsible for our failure in looking after their health in their youth.

The dues are only $2.50 per year. Why do you not apply for membership and participate in this wonderful work?

HEALTH FOR YOU AND YOU FOR HEALTH

You no doubt remember vividly the crisis of 1932 when every individual in America was filled with fear and unrest as to what the future held for them. Did you ever think that a similar feeling would come to you should you know that some of your family or close friends were stricken with an illness that would affect not only their lives but your health and well-being as well as that of the neighborhood in which you live? This illustration, like the parables of old, could easily affect you whether you be physician, lawyer, educator or any individual in any walk of life.

The Louisiana Health Council, a state chapter of the National Health Council, is composed of a group of individuals who are very conscious of the health and health needs of our state. They are giving of their time, resources and efforts to make your state a healthier place for you to live and raise your family. Therefore, we are asking that you join us in working out the various solutions to better health programs for everyone.

We are having, as you will see from the program, most of the organizations in this state who deal with health services to speak to us at our annual meeting November 11th and 12th in Monroe. We are asking you to come and give your community two days time to inform yourself of the various facilities at your command for the promotion of better health in your community.

It has been so aptly said, "no man stands so straight as when he stoops to help a child". We never know when we join a health program that eliminates some dangerous health evil in our community but what we are preventing our own loved ones from becoming a victim of this health menace. I believe that we can further state that we do not believe that children are either good or bad. We can say that a child is either happy or unhappy and poor health is the greatest cause of inefficiency or unhappiness among all people.

In closing I would like to appeal to you to come to this meeting and give of your time and know-how to help develop the program of cooperation with the existing physicians and agencies who are striving at all times to promote your health and well-being in this state. I will be looking forward to meeting you in Monroe.

See program in medical news section.

M. C. WIGINTON, M. D., President
Louisiana Health Council

MEDICAL NEWS SECTION

CALENDAR

PARISH AND DISTRICT MEDICAL SOCIETY MEETINGS

Society	Date	Place
Calcasieu	Fourth Tuesday every other month	Lake Charles
East Baton Rouge	Second Tuesday of every month	Baton Rouge
Morehouse	Third Thursday of every month	Bastrop
Natchitoches	Second Tuesday of every month	
Orleans	Second Monday of every month	New Orleans
Ouachita	First Thursday of every month	Monroe
Rapides	First Monday of every month	Alexandria
Sabine	First Wednesday of every month	
Second District	Third Thursday of every month	
Shreveport	First Tuesday of every month	Shreveport
Vernon	First Thursday of every month	

DISTRIBUTION OF NURSES

Nearly 400,000 nurses—an increase of 16,000 since 1950—are now working in the U. S., according to new figures announced today by Surgeon General Leonard A. Scheele of the Public Health Service, U. S. Department of Health, Education, and Welfare. Estimates based on the latest available figures from the 48 States and District of Columbia show a total of 389,600 professional nurses in active practice in the Nation. However, the demand for nursing services is so great, Dr. Scheele said, that the present recruitment goal for the Nation as a whole is 55,000 student nurses a year.

The number of hospital nurses, the largest single group, has increased by 15 per cent in the last four years to a total of 231,000. Private duty nurses, the next largest group, who are also at the bedside, number 74,000. The 35,200 nurses working in doctors' offices; 25,300 public health nurses; 14,000 industrial nurses; and the 8,200 nurse educators in schools of nursing make up the remainder of the total, along with 1,900 nurses in a variety of other fields.

The ratio of all nursing personnel, including student nurses in general hospitals, has risen from 69 per 100 patients to 74 per 100 patients since 1950—making it the highest in history.

"The steady rise in the nurse supply of the nation is significant to the total health picture," Dr. Scheele pointed out, "because nurses play such a vital part in all phases of our national health. For that very reason the nursing profession today offers a wide variety of excellent opportunities in the field of public health, in hospitals, schools, industry, doctors' offices, and, of course, in our schools of nursing."

STANDING COMMITTEES FOR 1955

THE NEW ORLEANS GRADUATE MEDICAL ASSEMBLY

ADVERTISING and PUBLICITY
Dr. Charles L. Brown, Chairman
Dr. Homer J. Dupuy, Vice-chairman

BADGE
Dr. Ruth G. Aleman, Chairman
Dr. James E. Bailey, Vice-chairman

CONSTITUTION and BY-LAWS
Dr. Emmett L. Irwin, Chairman
Dr. H. Ashton Thomas, Vice-chairman

FINANCE
Dr. Andrew V. Friedrichs, Chairman
Dr. Edwin H. Lawson, Vice-chairman

HALLS and SCREENS
Dr. H. Reichard Kahle, Chairman
Dr. Jason H. Collins, Vice-chairman

HOSPITALS
Dr. Dan D. Baker, Chairman
Dr. Francis E. LeJeune, Vice-chairman

HOTELS
Dr. Lucien A. LeDoux, Chairman
Dr. John T. Sanders, Vice-chairman

POSTCLINICAL TOUR
Dr. Edgar Hull, Chairman
Dr. Eugene H. Countiss, Vice-chairman

PRINTING
Dr. Louis J. Bristow, Jr., Chairman
Dr. William R. Arrowsmith, Vice-chairman

RECEPTION
Dr. Peter Graffagnino, Chairman
Dr. Ruble Moor, Vice-chairman

REGISTRATION
Dr. Val H. Fuchs, Chairman
Dr. George H. Hauser, Vice-chairman

ROUND-TABLE LUNCHEONS
Dr. Howard Mahorner, Chairman
Dr. J. O. Weilhaecher, Jr., Vice-chairman

TECHNICAL EXHIBITS
Dr. Robert A. Robinson, Chairman
Dr. Ralph M. Hartwell, Vice-chairman

TELEPHONE and TRANSPORTATION
Dr. M. L. Stadiem, Chairman
Dr. Frank T. Kurzweg, Vice-chairman

Eighth Annual Convention

Louisiana Health Council

Monroe, Louisiana

NOVEMBER 11-12, 1954

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November 11, 1954

8:00 A. M.
Registration—Virginia Hotel and Francis Hotel
9:00-10:00 A. M.

Business Meeting—Virginia Hotel Roof
Dr. M. C. Wiginton, Presiding

10:00-12:00

General Meeting
Dr. M. C. Wiginton, Presiding
Panel—Report of Resources

1. Health Resources Furnished by State Board of Health
 Dr. S. J. Phillips, President, Louisiana State Board of Health, New Orleans
2. Resources of Louisiana State Medical Society
 Dr. Walter Moss, President Louisiana State Medical Society, Lake Charles
3. Nutrition as it Applies to Everyday Living
 Miss Evelyn Terrell, Supervisor of School Lunches — State Department of Education, Baton Rouge
4. State Department of Education's School Health Program
 Mr. J. B. Robertson, Director of Elementary and Secondary Education, State Department of Education, Baton Rouge
5. State Dental Health Program
 Dr. William Epstein, Monroe
6. Special Education Clinic in Regard to Exceptional Children
 Mr. John E. Robinson, Director, Special Education Clinic—Southeastern College, Hammond
7. Practical Nursing Program
 Miss Marion Souza, Director, Practical Nurse Education—State Department of Education, Baton Rouge
8. Nurse Recruitment
 Miss Dorothy Tayrein, Monroe
9. Parish School Health Program
 Supported by Parish Superintendent's Association
 Mr. F. Shiel, Superintendent LaSalle Parish Schools, Jena
10. Tuberculosis Association Program
 Miss Lois Simmons, Executive Secretary, Louisiana TB Association, New Orleans
11. Cancer Association Program
 Mrs. Marian Simmons, Executive Secretary—Louisiana Cancer Society, New Orleans
12. Department of Institutions—Plans for Health Improvement
 Dr. Edward D. Grant, Director, Department of Institutions, Baton Rouge
13. Agricultural Extension Service Health Program
 Miss Ellen LeNoir, State Home Demonstration Agent, L.S.U. Agricultural Extension Service, Baton Rouge
14. Department of Welfare Health Outlook
 Mr. Edward P. Dameron, Director State Department of Public Welfare, Baton Rouge
15. Voluntary Health Insurance
 Dr. D. B. Barber, Alexandria
16. Visual Screening Program, Alexandria Lions Club
 Dr. Roger F. Shaw, Alexandria
17. Farm Bureau Federation Health Program
 Mr. H. E. Slusher, President, Missouri Farm Bureau Federation, Jefferson City, Missouri
18. American Medical Association Resources for Health Program
 Mr. Aubrey Gates, Field Director, AMA Health Program, Little Rock, Arkansas

12:00 Noon

Luncheon—Francis Hotel
Mrs. Paul Thompson, Presiding
Program—Mrs. Cyril T. Yancey, Auxiliary to Ouachita Parish Medical Society
Speakers—Mrs. M. C. Wiginton, President, Auxiliary to Louisiana Medical Society—Dr. F. S. Crockett, Chairman Health Committee, A.M.A. West Lafayette, Indiana

2:30-3:30 P. M.

General Meeting—Francis Hotel
Dr. M. C. Wiginton, Presiding
Buzz Session

3:30-5:00 P. M.

Questions for Panel Members
Moderator—Dr. H. B. Hewitt

7:30 P. M.

Banquet—Virginia Hotel Crystal Ball Room
Dr. M. C. Wiginton, Presiding
Greetings—Mr. John E. Coon, Mayor, Monroe; Mr. Allan Norris, Mayor, West Monroe; Mrs. Paul Thompson, Acting President, Ouachita Health Council; Dr. Walter Moss, State Medical Society
Response—Mr. Ira L. McGehee
Speaker—Mr. H. E. Slusher, Missouri Farm Bureau

November 12, 1954

9:00-10:00 A. M.

Business Meeting — Virginia Hotel Crystal Ball Room
Dr. M. C. Wiginton, Presiding

10:00-11:45 A. M.

Discussions—Incorporation of Resources in State Program

12:00 Noon

Luncheon—Virginia Hotel Roof
Mr. Ira L. McGehee, Presiding
Speaker—Mr. Aubrey Gates
Installation of Officers—Mr. Aubrey Gates

Afternoon

Meeting of the Board — Virginia Hotel Crystal Ball Room — (Officers and Board Members elected for 1955)

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Convention Committee Chairmen

Program	Dr. H. B. Hewitt
Convention	Dr. Cyril T. Yancey
	Mrs. Paul Thompson, Co-Chairman
Registration	Mrs. Gilbert Faulk
Decorations	Mrs. Dewitt Milam
Music	Mr. P. B. Mangam
Banquets	Mrs. James Larkan, Jr.
Tickets	Miss Eleona Brinsmade
Luncheons	Mrs. Dewitt Milam
Publicity	Mr. Roger Manning
Housing	Mr. Dan L. Caldwell
	Dr. Seymour Solomon

MEDIC TV PROGRAM RELEASE DATES

For those who have been following Dow Chemical Company's new TV program, entitled "Medic", over the NBC network on Monday nights, the following titles and subjects to be covered in future broadcasts have been obtained.

November 8, General Practitioner; November 22, Day 10, Bubonic Plague; November 29, My Very Good Friend Albert, Hearing; December 6, With This Ring, Unwed Mother; December 20, Red Christmas, Medical Aspects of Traffic Accident.

BOOK REVIEWS

Cure Your Nerves Yourself; by Louis E. Bisch, M. D., New York, N. Y., Wilfred Funk, Inc., 1953, pp. 247. Price $3.50.

This book purports to help the individual work out his troubles without going to a psychiatrist, partly because it is alleged he *can do so,* and partly because a psychiatrist is either unavailable, unnecessary, or too expensive.

The reader will probably get his greatest benefit from reading through until he comes to an instance or an illustration with which he can identify. This same proposition holds for many books, but seems especially so in this one. At times the advice is generalized to the point of uselessness and amounts almost to psychiatric evangelizing.

The book has a lot of admonition that is almost impossible to achieve, as for example, you should have a "frank, straight, honest, heart-to-heart talk with yourself." Also, the importance of "knowing thyself" is stressed. And then there are such discouraging and impossible statements as, "First you must understand your emotional nature thoroughly, no matter how hopelessly different it may seem to be." These represent goals which few people ever reach, even with help. Then there are such statements as "Everybody can do at least one thing superlatively well," which is simply not true.

There is some doubt about the effectiveness of self-induced therapy as coming from a book. Certainly the presence of a helping person or a group is much more likely to initiate reform and furnish strength. It would seem that if a person is helped by this book, he is probably on the verge of helping himself, and needs only trigger help to get started.

There are psychiatric ideas that may be new to most people, such as, that fears of suicide and insanity are protective.

Paragraphs here and there are splendid gems, but one gets the impression that the book was written too rapidly.

With all these comments which appear to be negative, this reviewer got some personal benefit from reading the book. And that, after all, is an important test.

LOYD W. ROWLAND, PH.D.

Pathology of the Heart; by S. E. Gould, M. D., Springfield, Illinois, Charles C Thomas, 1953, Pp. 1023. Price $25.50.

It is difficult to criticize this book from the pathological aspect. The material covers all the standard discipline used in studying how organs function in health and disease. The book merits a more inclusive title, for the function and anatomical aspects are tantamount to the pathological writings both in quantity and quality. At the same time it alters one's criticisms when one thinks of it only as a work of pathology in contrast to a more general treatise on heart disease. For example, a chapter was devoted to rheumatic disease of the heart but none to hypertensive disease of the heart, the leading cause of death in heart disease. It is not as distinct a pathological entity as rheumatic disease, but the book is not exclusively on pathology. Since this book shows a practical approach to heart disease it seems logical to include a chapter, or a more detailed sub-chapter, on hypertensive heart disease.

The presence of paragraphs on terminology which are very rewarding in the chapters that possessed them were conspicuously absent in many of the others. Some of the greatest advances a reader of this type of book obtains is how to use the terms less ambiguously, both while reading the chapter and in using the information in the future. Another valuable constituent of a chapter such as above would be the natural history of the disease. The information was usually available in each section, but would be more valuable listed under the above heading.

A chapter on modern advancements and new studies in pathology of the heart is wanting with an emphasis on problems brought out by this book. For example, such a chapter could include the statement that not all mitral valve deformities are due to rheumatic valvulitis, that failure in old rheumatic heart disease is often due to active disease, that myocardium fails at times without change of the muscle fibers being demonstrated by conventional techniques and criteria for stenosis of valves, dilated rings, and hypertrophy of cardiac muscle. Nothing was said about histochemical studies which could be included in the above.

This book is valuable to any physician who treats heart diseases. It is unusually factual.

C. Y. BOWERS, M. D.

PUBLICATIONS RECEIVED

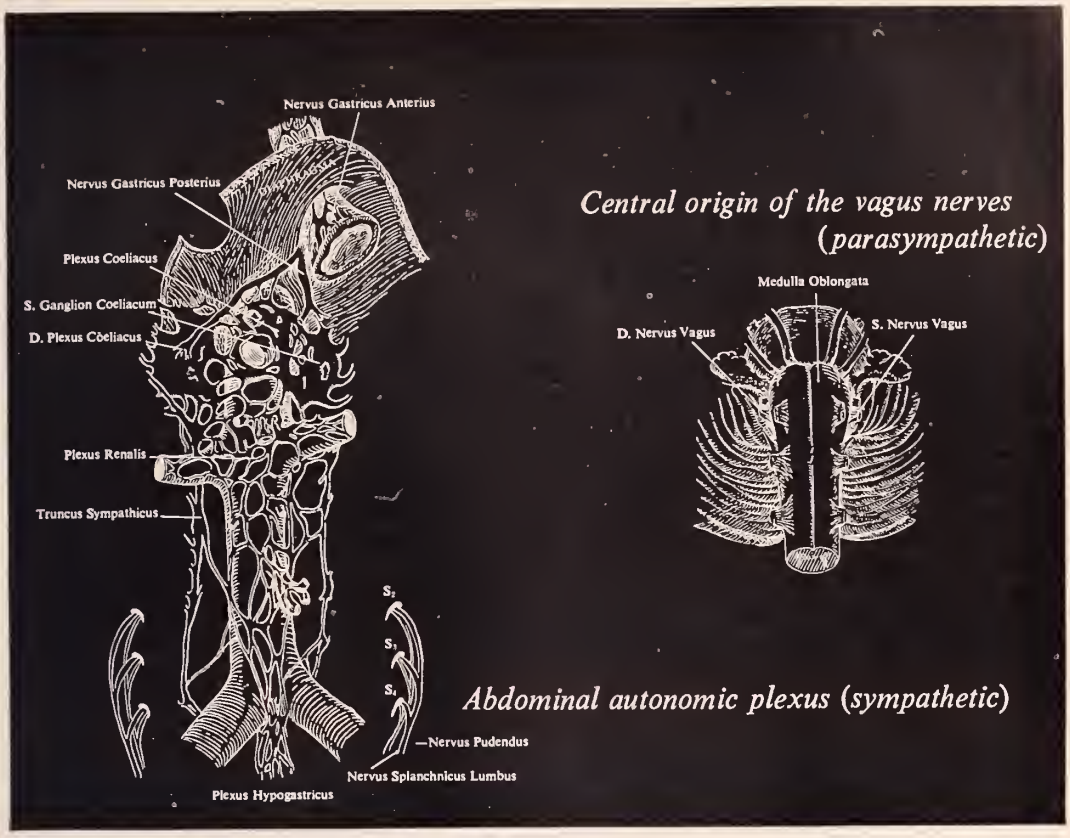
American Pharmaceutical Association, Washington: The Manual of Antibiotics, by Henry Welch, Ph.D.

Harvard University Press, Cambridge: Biochemical Determinants of Microbial Diseases, by Rene J. Dubos.

Little, Brown & Co., Boston: Clinical Aspects of the Autonomic Nervous System, by L. A. Gillilan, Ph.D., M. D.

Philosophical Library, N. Y.: The Scourge of the Swastika, by Lord Russell of Liverpool, C.B.E., M.C.

Charles C Thomas, Publisher, Springfield, Ill.: Neck Dissections, by James Barrett Brown, M. D., and Frank McDowell, M. D.



Control of Gastric Motility and Spasticity in Peptic Ulcer with Banthine®

"The need[1] for suppressing gastric motility and spastic states is . . . fundamental in peptic ulcer therapy. Since the cholinergic nerves are motor and secretory to the stomach and motor to the intestines, agents capable of blocking cholinergic nerve stimulation are frequently used to lessen motor activity and hypermotility."

Banthine[2] "has dual effectiveness; it inhibits acetylcholine liberated at the postganglionic parasympathetic nerve endings and it blocks acetylcholine transmission through autonomic ganglia."

It has been shown[1] to diminish gastric motility and secretion significantly as well as intestinal and colonic motility.

The usual schedule of administration in peptic ulcer is 50 to 100 mg. every six hours, day and night, with subsequent adjustment to the patient's needs and tolerance. After the ulcer is healed, maintenance therapy, approximately half of the therapeutic dosage, should be continued for reasonable assurance of nonrecurrence.

Banthine® (brand of methantheline bromide) is supplied in: Banthine ampuls, 50 mg.—Banthine tablets, 50 mg.

It is accepted by the Council on Pharmacy and Chemistry of the American Medical Association. Searle Research in the Service of Medicine.

1. Zupko, A. G.: Pharmacology and the General Practitioner, GP 7:55 (March) 1953.

2. McHardy, G. G., and Others: Clinical Evaluation of Methantheline (Banthine) Bromide in Gastroenterology, J.A.M.A. *147*:1620 (Dec. 22) 1951.



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The Upjohn Company, Kalamazoo, Michigan



LONG BEFORE HOT FLUSHES APPEAR . . .

Patients presenting such classic menopausal symptoms as hot flushes cause little diagnostic difficulty. However, throughout the period of declining ovarian function which may begin long before hot flushes appear, many women complain of distressing symptoms which though less clearly defined are actually due to estrogen deficiency. For example, insomnia, headache, easy fatigability, and symptoms affecting the bones, joints, and the skin may not be readily identified as due to estrogen deficiency because they may occur years before, or even years after cessation of menstruation.

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1. Werner, A.: Acta endocrinol. *13*:87, 1953.
2. Malleson, J.: Lancet *2*:158 (July 25) 1953.
3. Goldzieher, M. A., and Goldzieher, J. W.: Endocrine Treatment in General Practice, New York, Springer Publishing Company, Inc., 1953, p. 23.

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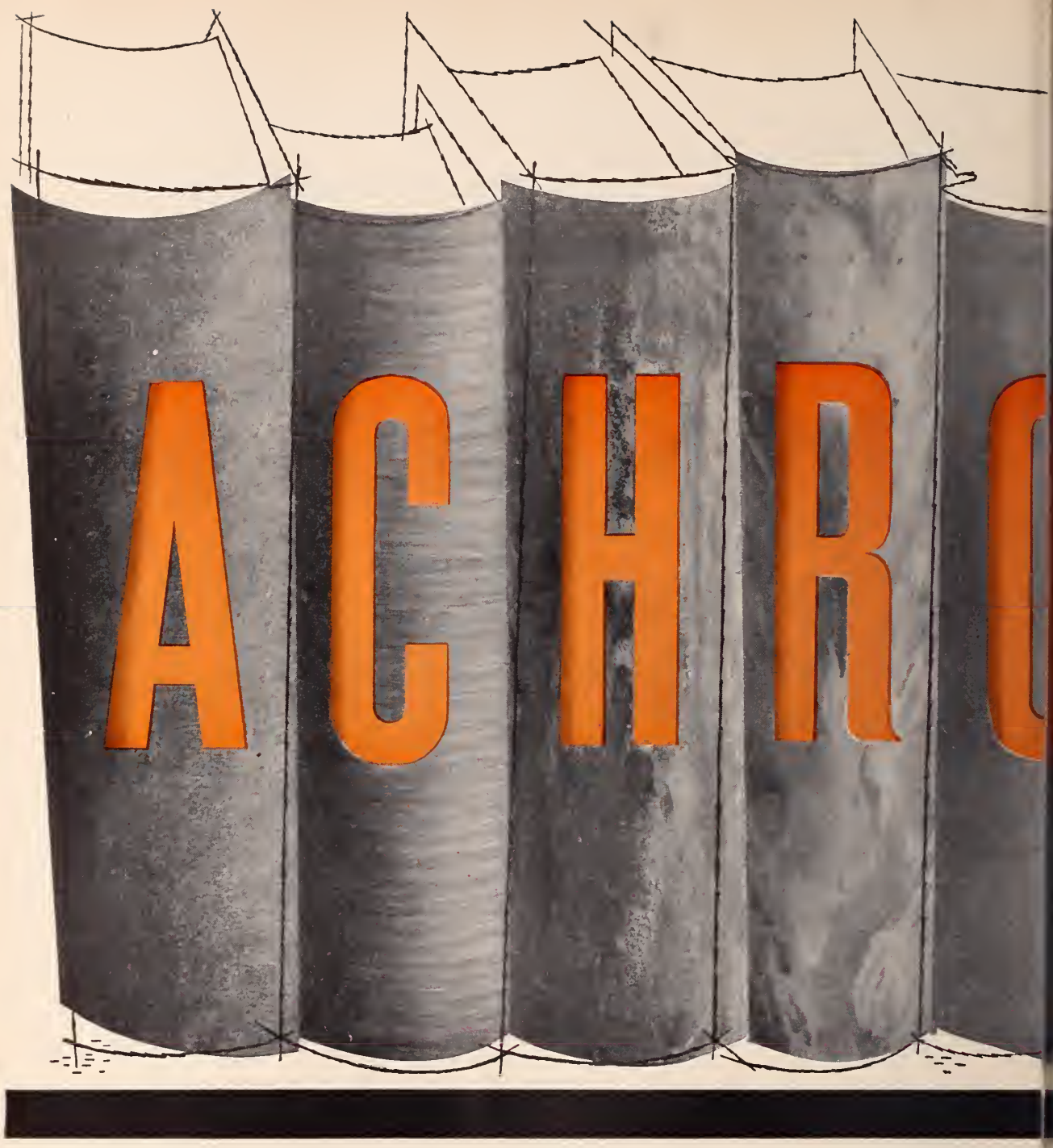
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1. Goldsmith, G. A.: Application to Human Nutrition, in Bourne, G. H., and Kidder, G. W.: Biochemistry and Physiology of Nutrition, New York, Academic Press Inc., 1953, chap. 23, p. 505.
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Streptomycin	12	6	18
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Streptomycin	0	0	0
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**Heck, W.E.; Lynch, W.J., and Graves, H.L.: Acta oto-laryng. 43:416, 1953.*

Distrycin dosage is the same as for streptomycin. In tuberculosis the routine dose is 1 Gm. twice weekly, in conjunction with daily para-aminosalicylic acid or Nydrazid (isoniazid). In the more serious forms of tuberculosis, Distrycin may be given daily, at least until the infection has been brought under control.

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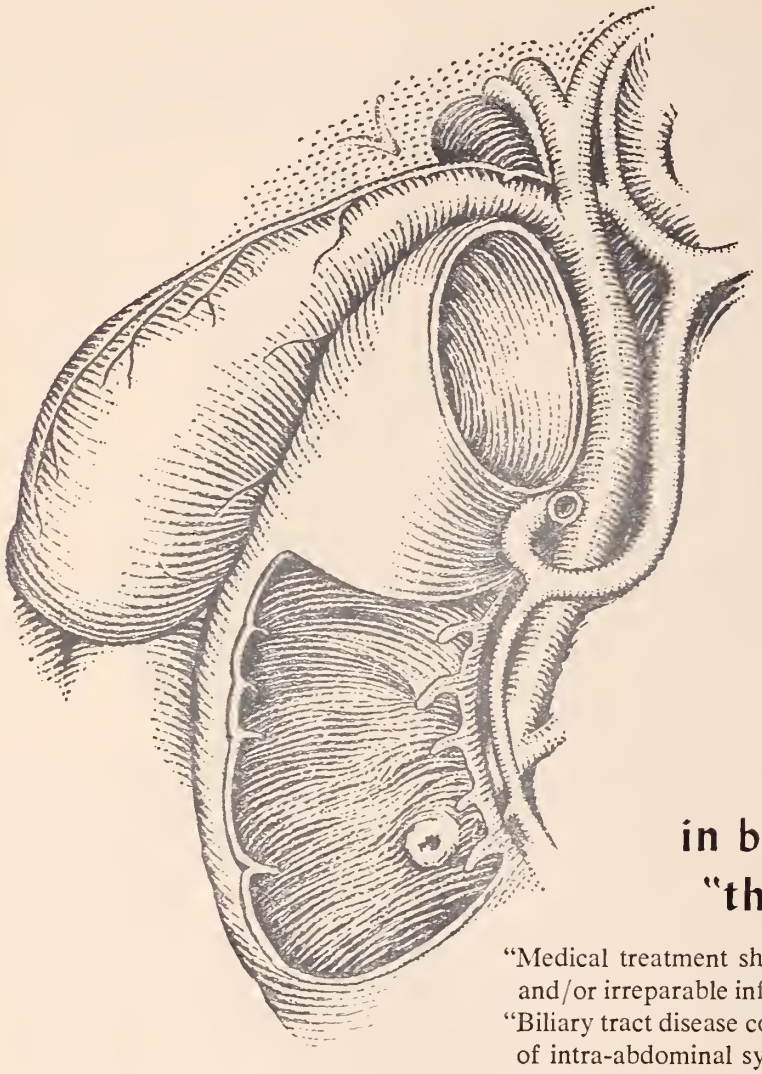
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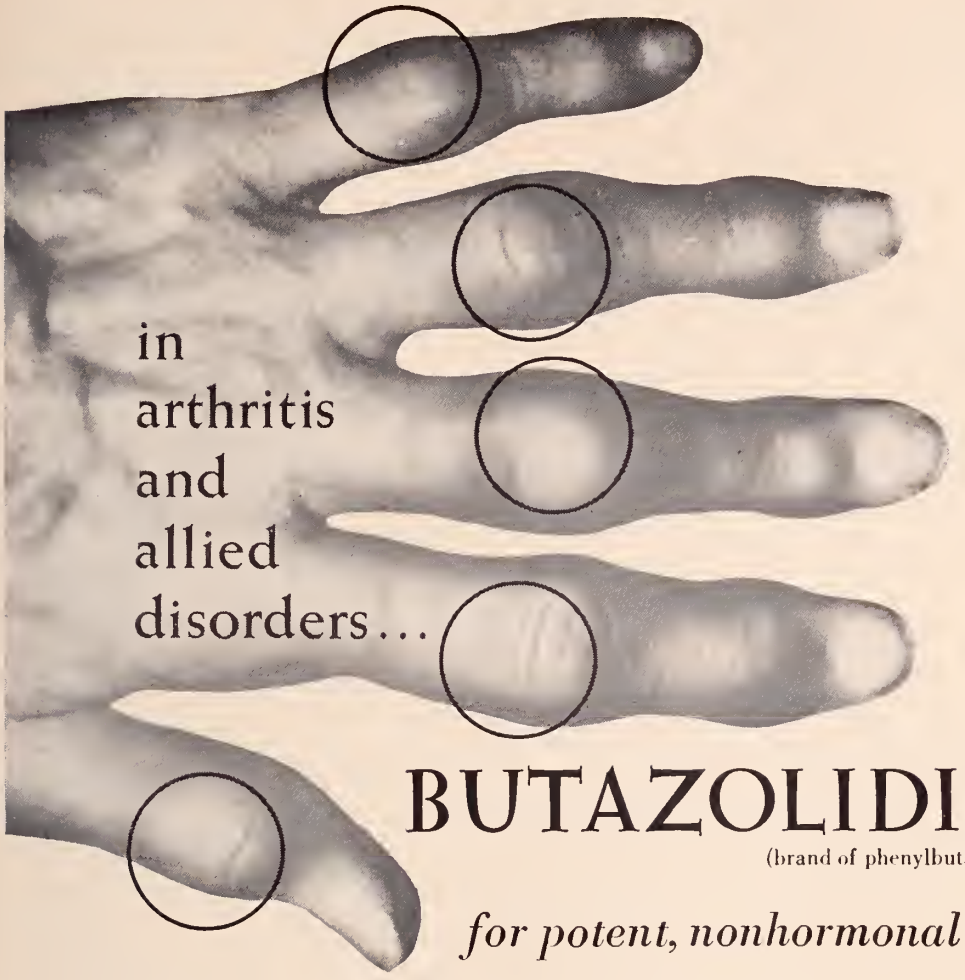
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*MacKnight, J. C.; Irby, R., and Toone, E. C., Jr.: Geriatrics 9:111 (Mar.) 1954.

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1. Allen, E.V.; Barker, N.W.; Hines, E.A., Jr.; Kvale, W.F.; Shick, R.M.; Gifford, R.W., Jr., and Estes, J.E., Jr.; Proc., Staff Meet. Mayo Clin. *29*:459 (Aug. 25) 1954.
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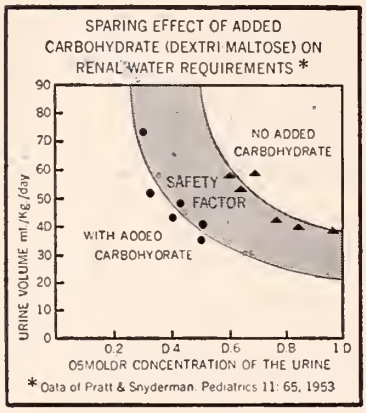
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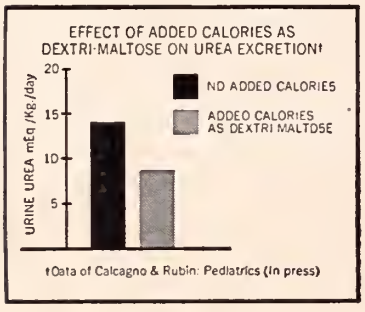
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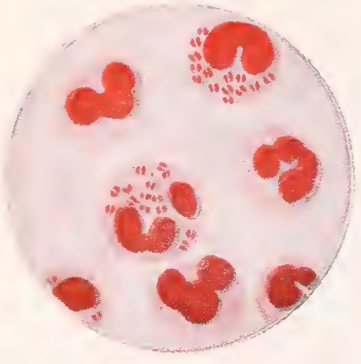
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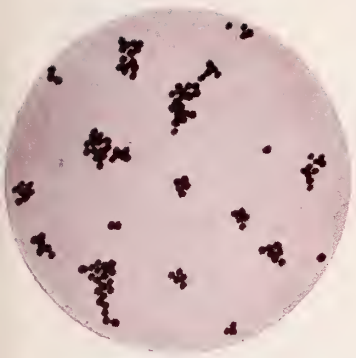


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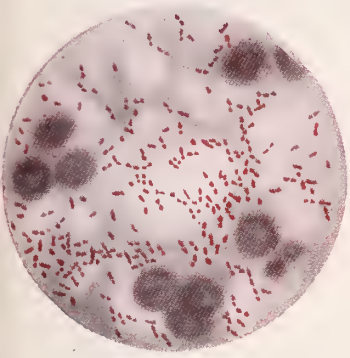
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(1) Yow, E. M.; Taylor, F. M.; Hirsch, J.; Frankel, R. A., & Carnes, H. E.: *J. Pediat.* **42**:151, 1953. (2) Dodd, K.: *J. Arkansas M. Soc.* **10**:174, 1954. (3) Hanbery, J. W.: *Neurology* **4**:301, 1954. (4) Miller, G.; Hansen, J. E., & Pollock, B. E.: *Am. Heart J.* **47**:453, 1954. (5) Keefer, C. S., in Smith, A., & Wermer, P. L.: Modern Treatment, New York, Paul B. Hoeber, Inc., 1953, p. 65.



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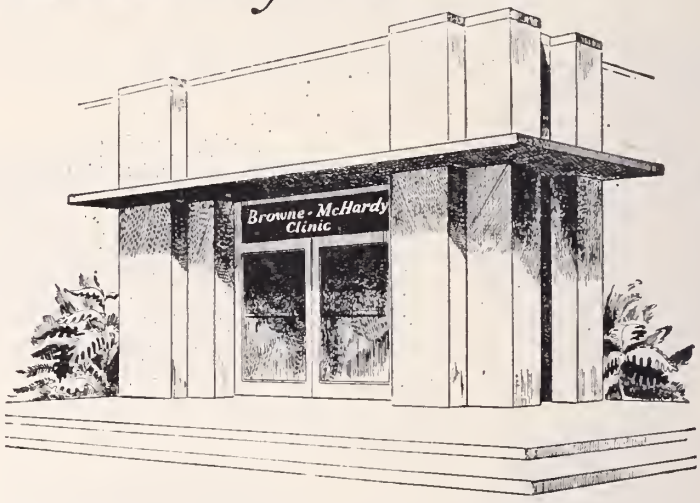
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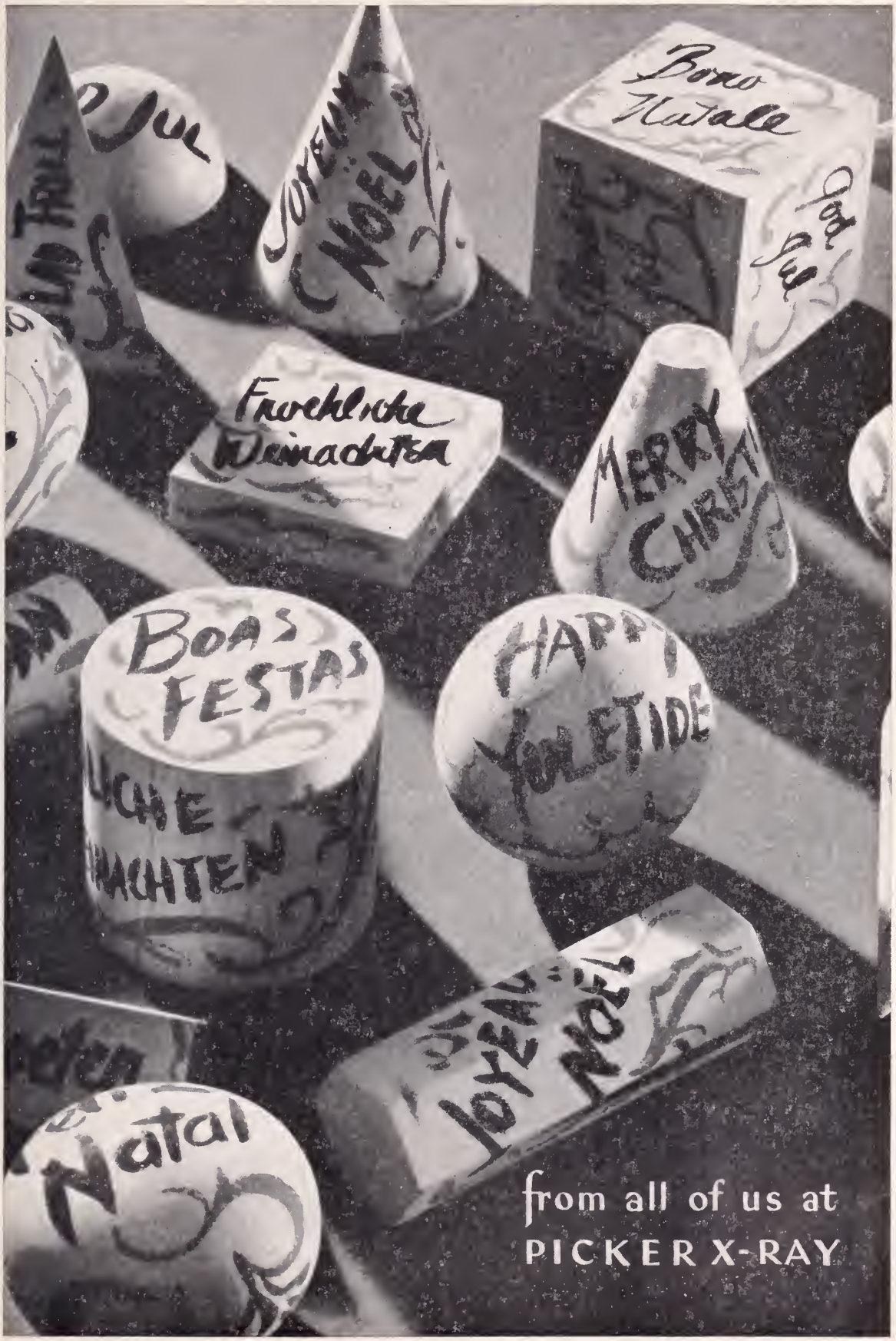
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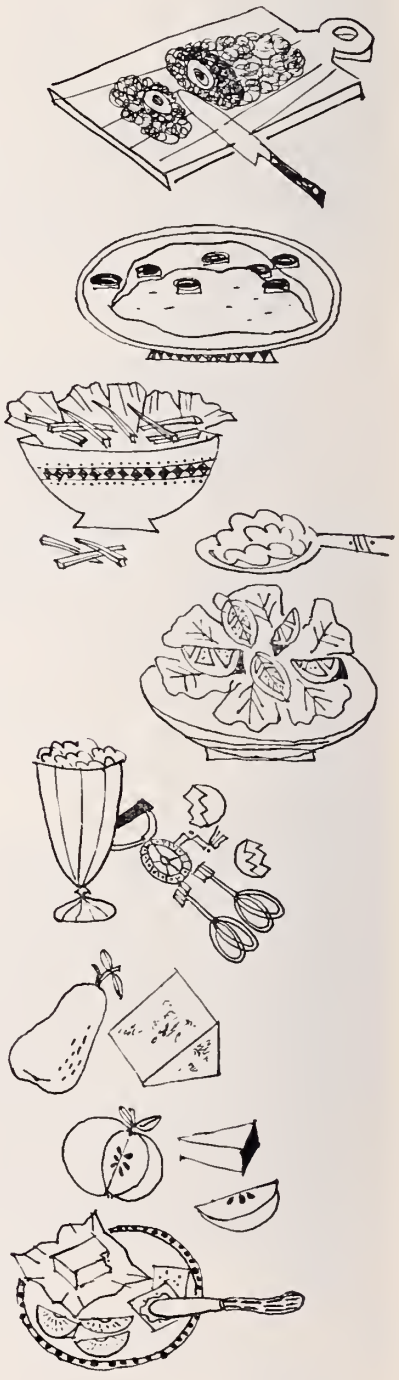
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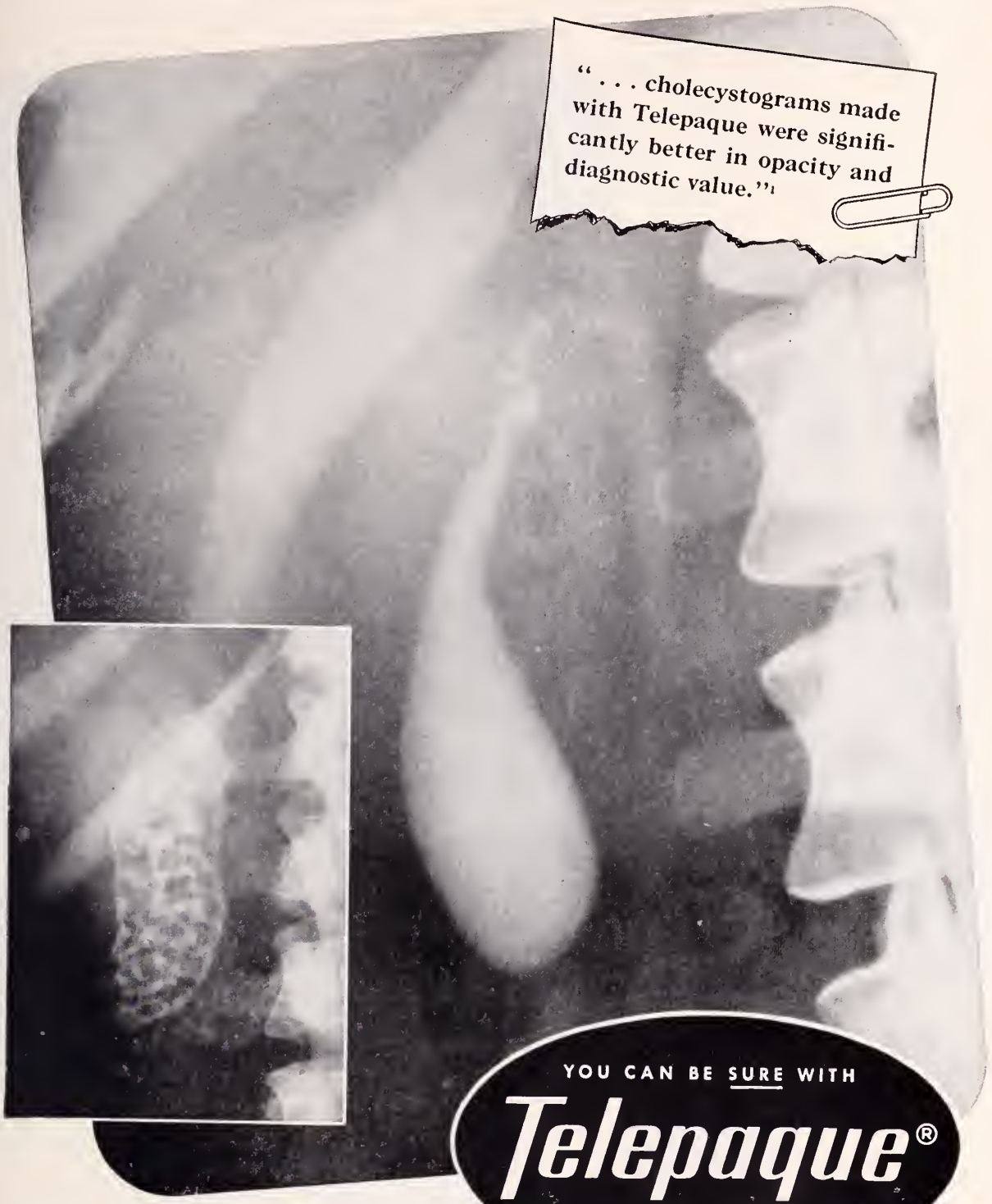
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2. Deutsch, E.: Scientific Exhibit, Gastroscopy. Clinical Meeting A.M.A., St. Louis, December, 1953

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TREATMENT OF LEUKEMIA *

CHARLES C. SPRAGUE, M. D.
NEW ORLEANS

INTRODUCTION

Tremendous time and effort has been spent in an attempt to find a cure or control for the various leukemic states, yet from the standpoint of the practicing physician we have made very little progress. Despite this pessimistic note, I think there is reason for optimism, and despite our poor record, significant advances have been made and the apparent shift of interest in some quarters from therapy to well conceived plans for elucidating the abnormalities in basic biochemical and enzymatic processes is a healthy one.

Time will not permit a discussion of the various theories as to the etiology of leukemia; suffice it to say it hardly seems justified to label all forms of the disease as neoplastic growths. It may well be that a variety of etiologic and predisposing factors play a role.

Although statistics can be misleading, it seems probable that there has been a real increase in the incidence of leukemia during the past few decades. In a study made by Gould, Innes, and Robson [1] of 647 admissions to several general hospitals in Scotland, it was noted that there was approximately 1 case of leukemia per 2000 hospital admissions during the period 1938-1940; whereas it increased to approximately 1 case per 1000 admissions for a corresponding period ten to twelve years later. At the Charity Hospital of Louisiana, New Orleans, a similar study revealed that for the two year period July 1, 1939 to July 1, 1941, there was 1 patient with leukemia for each 2125 admissions excluding newborns. For the two year period July 1, 1949 to July 1951, this had increased to 1 case for every 786 admissions or an increase of 170 per cent. Just how much of this increase represents a real increase in the incidence of leukemia and how much represents improvement in diagnostic methods is difficult to assess.

TREATMENT

Treatment of the chronic leukemias may be divided into three categories: (1) irradiation, (2) chemotherapeutic agents, and (3) supportive treatment.

Ionizing radiation may be administererd externally in the form of x-ray or internally in the form of radioactive isotopes (phosphorus or gold). Radiophosphorus (P^{32}) has proved very effective for internal radiation because of its distribution of radiation, its preferential concentration within the blood forming system and its incorporation in rapidly metabolizing tissues. P^{32} is a pure beta emitter with a maximum range of tissue penetration of approximately 7 millimeters and a half-life of fourteen days. Gold is less desirable because of its gamma component, which requires additional safety precautions in handling and its very short half-life, 2.7 days. X-ray therapy remains our stand-by in the treatment of chronic leu-

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kemias, but despite widespread use of this form of treatment for many years, I am not certain that we are getting maximum benefit in many instances. The conventional form of X-ray therapy directed to spleen, bones, and lymph nodes is familiar to most physicians, but I think it worthwhile to call to your attention a method of therapy that has been suggested by Osgood.[2] As a result of evidence obtained from bone marrow culture studies,[3, 4] he found that ionizing radiation decreased the rate of cell division, but did not kill the cells and that it must reach every cell which is to be affected. Carrying this concept over to the treatment of human leukemia, he felt that spray x-ray should be given so that the entire body would be irradiated. This usually requires equal doses to each of two ports, separated at the umbilicus, at each visit, irradiating the front and back of the body on alternate visits, a dose of 10r to each port. The factors used are 200-400KV, no cone, 0.5 mm. Cu. plus 1.0 mm. Al. or equivalent filtration, half-value-layer over 1.0 mm. Cu. and 80-100 cm. target skin distance. Therapy is started as soon as the diagnosis is made. At the first visit the largest dose of irradiation is given that has been observed never to constitute overtreatment. For x-ray this is 10r and for radioactive phosphorus 20 microcuries /Kg. of body weight in chronic lymphocytic leukemia and twice these values in chronic myelocytic leukemia. It might be mentioned parenthetically at this point that patients with chronic lymphocytic leukemia vary markedly in their sensitivity to x-ray therapy and chemotherapeutic agents as well; as a result one must be cautious with the first several doses of any therapeutic agent. After the first visit subsequent doses are given at intervals of one to three weeks, guided by the response of the leukocyte count, the size of the liver, spleen, and lymph nodes, the hemoglobin, bleeding tendency, and the ability of the patient to do his usual work and recreation. No dose is repeated oftener than once a week. When optimum conditions have been obtained, that is, when the white cell count is between 10,000 and 20,000, the spleen and liver are at or above the costal margin, the lymph nodes not over 1+ enlarged, and the patient has returned to his usual activities—usually within six weeks (range four to twelve weeks), the dose and interval are adjusted until that dose and interval are found which maintain this optimum condition. The dose and interval, with occasional minor adjustments, are continued regularly over a period of years. The range of interval for the spray x-ray is two to twelve weeks (usually ten) and the range of dose from 3 to 25r per month (average 10r). For P^{32} the range of dose is 1 to 15 microcuries/Kg/month (usually 6 microcuries/Kg). A maximum dose of 25r or 100 microcuries/Kg is never exceeded in any one dose. Since 1941, every one of Osgood's patients with chronic leukemia has received this form of therapy. The ultimate survival times from onset of symptoms and after therapy was initiated, were predicted by the "method of maximum likelihood" and these were compared with other groups reported in the literature. It must be remembered that an unstated number of the reports culled from the literature were made prior to time of widespread use of antibiotics and blood transfusions and are not entirely comparable. However, it would seem that the patients treated with radioactive phosphorus would have had benefit of these additional therapeutic aids and might be comparable. With the above mentioned statistical method, the estimated survival time from onset of symptoms in his series of 163 patients was 7.0 ± 1 years as compared to 3.5 ± 3 years for 1978 patients from the literature where conventional x-ray therapy was used and 4.8 ± 1 years for 330 patients treated with radioactive phosphorus. I would not want to leave the impression that this is conclusive evidence that Osgood's method is the best method of administering irradiation therapy, for from a statistical standpoint his report leaves much to be desired. However, I do

think the method appears logical and attempts should be made to prove or disprove it.

Chemotherapeutic agents of various types are being added constantly to our therapeutic armamentarium. Nitrogen mustard, methyl-bis (B chloroethyl amine hydrochloride) and triethylene melamine (2, 4, 6 triethylene-imino-s-triazine) (TEM) can be discussed together because their mechanism of action is the same, namely, that the ethylenimonium transformation products of the nitrogen mustard compounds react with the functional groups of many cell protein and enzyme systems, inhibit mitosis, produce cytologic alterations, disturb cell function, and may produce death. In 1950, Lewis and Crossley [5] and Burchenal et al [6] reported that TEM had a retarding effect on tumor growth in mice and mouse leukemia. Shortly thereafter Karnofsky and his associates [7] found that with TEM temporary periods of improvement comparable to those obtained with the nitrogen mustard could be produced in patients with Hodgkin's disease, lymphosarcoma, chronic lymphocytic and myelocytic leukemia, and in mycosis fungoides. Actively proliferating lymphoid tissue is preferentially affected by these drugs. Rundles and Barton [8] went so far as to express the opinion that in patients with chronic lymphocytic leukemia who had bone marrow involvement, TEM was the treatment of choice. It has the decided advantage over nitrogen mustard in that it can be given by mouth and that toxic side effects are rarely observed; whereas troublesome nausea and vomiting are seen in most patients receiving nitrogen mustard therapy. A course of therapy with nitrogen mustard consists of a daily intravenous injection of 0.1 mgm./Kg. of body wt. for four days. The dose of TEM that we have used has been 5 mgm. daily for four days. It has been stated by Dameshek that in the first course of treatment the dose of TEM should not exceed 2.5 mg. given three times in the first week and twice in the second. In a series of approximately 50 patients treated at Charity Hospital and the Veteran's Hospital, New Orleans, we have not found the larger dose to be excessive in a single instance. It is important that TEM be administered while the patient is in a fasting state and it is highly desirable to have the patient receive a 1 gram dose of soda bicarbonate fifteen to thirty minutes prior to TEM. It has been our policy to give the drug at bedtime with 1½ grains of seconal. The disadvantages of TEM are that it is slower in its action, requiring an average of nine days for relief of symptoms as compared to two to five days for nitrogen mustard, and individual tolerance varies considerably. It is our feeling that once an initial remission has been achieved that maintenance therapy should be continued. The maintenance dose in our experience has varied between 2 and 10 mg. per week. TEM and HN_2 are more effective in chronic lymphocytic than in chronic myelocytic leukemia.

Urethane is now used only infrequently in the treatment of chronic leukemia. The mode of its action is poorly understood but it appears to interfere with intercellular enzyme systems and in tissue cultures it seems to have maximal damaging effect on dividing cells. It is more effective in chronic myelocytic leukemia. Some suggest using urethane as the sole therapeutic agent. Others recommend initial x-ray therapy with urethane as maintenance therapy and still others reserve its use for patients with bone pain. The usual recommended dose is 3 to 4 grams per day although Cooper and Watkins [8] found that 1.5 grams per day was adequate in most instances. It may be given orally, intravenously, or as a rectal suppository. Undesirable side effects such as nausea and vomiting are common with oral administration. When the white count falls to approximately half the initial value the dose is reduced by half and when the count becomes normal the dose is further reduced to a level that will tend to maintain the count at that level. It appears to be the consensus that urethane is in-

ferior to irradiation therapy.

Arsenic in the form of Fowler's solution has been used for the treatment of leukemia for almost a century. Since x-ray and other chemotherapeutic agents have been introduced, it has been used less and less because of toxic side effects and a tendency for induced remissions to last such a short time.

6-Mercaptopurine is a relatively new drug that was synthesized and developed by Hitchings and associates.[9-11] It is an analogue of the nucleic acid constituent adenine and the physiological purine base hypoxanthine. It is one of a large series of such analogues that have been studied by Hitchings and coworkers for possible chemotherapeutic activity, on the grounds that interference with nucleic acid biosynthesis would be expected to be more damaging to parasitic than normal tissues. The drug must be given cautiously for maximum effect may be delayed. For that reason it is considered advisable to discontinue the drug when the white blood cell count first begins to fall. The dosage varies from patient to patient but the usual initial, daily dose is 2.5 mgm/Kg. orally. If there is no response after four weeks the dose may be increased to 5 mgm/Kg. When the white cell count begins to fall, the drug should be discontinued until the count stops falling or starts increasing. At that time maintenance therapy should be started. It is essential that a suitable maintenance dose be determined if an early relapse is to be avoided. The drug apparently has limited beneficial effect in the chronic leukemias and then only in chronic myelocytic leukemia. Burchenal and others[12] have reported their results with this drug in a variety of leukemic states.

Myleran, a trade name for 1,4-di-(methan-sulphonoxy) butane, was originally prepared at the Chester Beatty Research Institute in London. Studies carried out at the Royal Cancer Hospital, London[13, 14] demonstrated that in small daily oral doses (4 to 6 mgm.) Myleran depresses both normal and abnormal myeloid tissue. The drug appears to be more selective than nitrogen mustard or the folic acid antagonists in its effect on the myeloid cells. In doses large enough to depress myelopoiesis, it has little effect on lymphocytes and platelets and there are no undesirable side effects. Petrakis et al[15] have reported their results in 21 patients treated with Myleran and noted objective and subjective improvement in 8 of 11 patients with chronic granulocytic leukemia. No clinically significant remission was achieved in any type of leukemia other than chronic granulocytic. This drug is still restricted to clinical investigators in this country but it would seem that it may offer a valuable therapeutic agent in chronic granulocytic leukemia.

Supportive therapy has become increasingly important. In fact, it has been suggested by some that the increase in survival time of patients with leukemia is largely due to the excellent supportive therapy rather than so-called "specific" therapy.

A nutritious diet with supplementary vitamins is indicated. The patient's activities should be regulated so that they can maintain as near normal a life as possible without jeopardizing their health.

Blood transfusions should be administered according to the patient's symptoms of anemia. The possibility of a symptomatic hemolytic anemia should always be considered, particularly in patients with chronic lymphocytic leukemia with large spleens and elevated reticulocyte counts. An estimate of the severity of the hemolytic component can be made either by measurement of the fecal urobilinogen or by red cell survival studies. If there is an appreciable increase above normal in the rate of destruction of red cells, splenectomy should be considered. If the patient is too poor a surgical risk, ACTH or cortisone may help to alleviate the hemolysis. Antibiotics are of great value in combating infection which is such a common accompaniment of leukemia.

Treatment of acute leukemia at present can add only a few months to the life of

the patient as a rule, yet there are rare instances of prolonged remissions, some spontaneous, some drug induced, still others following infection or blood transfusions.

X-ray therapy is said to be ineffective in acute leukemia, in fact many radiologists feel that it aggravates the condition and is contraindicated. Undoubtedly, x-ray has little to offer the acute leukemic patient but some patients suffering from lymphoblastic lymphosarcoma where the cells circulate in the peripheral blood and are diagnosed as acute leukemia may have striking benefit from x-ray as well as other agents usually thought to be effective only in the chronic leukemias.

The forms of therapy which are most effective in acute leukemia are the folic acid antagonists and ACTH or cortisone. More recently, Burchenal's experience with 6-mercaptopurine [12] suggests that this may be of distinct value in patients becoming refractory to folic acid antagonists or hormone therapy. Of the folic acid antagonists, there are three which are the most widely used and they are approximately equal in their effectiveness. These are: (1) aminopterin (4-amino-pteroylglutamic acid), (2) amethopterin (4-amino-methyl-pterolylglutamic acid) and (3) amino - an - fol (4-amino-pterolylaspartic acid). It has been suggested that the mechanism of action of these drugs is as a metabolic antagonist in the formation of both folic and folinic acid. Swenseid and others [16] showed that following the oral administration of a folic acid antagonist, the excretion of a test dose of folic acid increases greatly, suggesting that the vitamin had been displaced in body tissues. The rate of remissions with this form of therapy has been reported from 30 to 60 per cent. The discrepancy in the reported incidence of induced remissions can be accounted for by the fact that each investigator has a slightly different definition of remission, and that at times they do not specify the types of leukemia treated or the age of the patient. Our own experience has been that a complete clinical and hematologic remission with normal bone marrow is rarely seen. With the addition of ACTH or cortisone to the folic acid antagonists, the incidence of remissions can be increased. Although the remission rate is higher and perhaps a little longer with this combination, the treatment of the patient in relapse becomes more difficult. Children respond much better than do adults, and acute lymphocytic leukemia responds better than other acute forms. Stomatitis is the commonest toxic manifestation of the folic acid antagonists; it may be relieved in some instances by reducing the dose or discontinuing the drug. Citrovorum factor or folinic acid is said to be specific for the complications but there is disagreement on this point. Lesions of the intestinal tract are also seen at times but much less frequently than the stomatitis. There is also a difference of opinion as to the best method for administering the folic acid antagonists. Some think intermittent therapy is best while others recommend continuous therapy; we prefer the latter. It should be remembered that if continuous treatment is to be given, the patient must be observed carefully at frequent intervals.

ACTH and cortisone are now being used very extensively in the treatment of acute leukemias, and in acute lymphocytic leukemia it is probably the treatment of choice, either alone or in combination with one of the folic acid antagonists or 6-mercaptopurine. It is not uncommon practice for these agents to be administered during the early phase of the disease when the patient is very toxic and later supplement or replace the hormones with chemotherapeutic drugs. Inasmuch as thrombocytopenia is a common accompaniment of acute leukemia, cortisone has the advantage over ACTH in that it can be administered orally, tending to minimize hematomas.

As previously mentioned, 6-mercaptopurine is quite effective in acute leukemia. Among a group of 45 children with acute leukemia, 15 had good remissions and an

additional 10 partial remissions with this drug.[12] Among 24 children with acute leukemia resistant to folic acid antagonist therapy, 5 had good remissions with 6-mercaptopurine. In children the daily dose of 2.5 mg/Kg. rarely caused toxic symptoms; with higher doses bone marrow depression and gastrointestinal symptoms may occur.

SUMMARY

In chronic myelocytic leukemia irradiation therapy remains the treatment of choice. In patients with a large liver or spleen, x-ray is preferable to radioactive phosphorus, if not, either method should prove about equally effective. Myleran is a new chemotherapeutic agent which offers great promise in chronic myelocytic leukemia; additional investigation needs to be done before we can be certain of its role. Likewise in chronic lymphocytic leukemia irradiation is usually the treatment of choice, particularly where the spleen, liver and nodes are very large. If these organs are not markedly enlarged and if there is extensive infiltration of the bone marrow, TEM may produce equally good or perhaps better results. Results with spray x-ray or P^{32} in either type of chronic leukemia seems to be superior to the conventional type of x-ray therapy. Symptomatic hemolytic anemia is a relatively common complication of chronic lymphocytic leukemia and may be relieved by splenectomy.

Folic acid antagonists in combination with ACTH or cortisone produce the highest incidence of remissions in acute leukemia. Adults do not respond nearly as well as do children and acute lymphocytic leukemia responds much better than do other forms of acute leukemia. When patients become refractory to these agents, 6-mercaptopurine may be of value. There are insufficient data available to know what response might be anticipated with a combination of 6-mercaptopurine and one of the steroid hormones.

Supportive therapy, particularly blood transfusions and antibiotics, is of unquestionable value in prolonging the life of the patient and adding to his comfort.

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A STUDY OF THE INCIDENCE OF HEART DISEASE * †

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SHREVEPORT

This study is concerned with the 3,607 cardiac deaths occurring among the 13,015 autopsies performed at the Los Angeles

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County General Hospital from 1941 through 1947. These cardiac deaths (27.7 per cent of the autopsies) include those resulting from cardiac failure and also those resulting from associated conditions such as rupture of an aortic aneurysm, uremia, or cerebral hemorrhage or thrombosis with hypertension.

The purpose of this study was to determine the relative incidence of the different types of heart disease with special reference to age and sex.

I. INFECTIOUS HEART DISEASE

The cases were divided into two groups: infectious and noninfectious heart disease (Table 1). Included in the infectious group are rheumatic, bacterial and syphilitic heart disease, and myocarditis. There were 673 cases of infectious heart disease (18.6 per cent of the total cardiac deaths and 5.1 per cent of the total autopsies).

TABLE 1
HEART DISEASE (3,607 Cases)

Types	Per Cent of Groups	Per Cent of Total Group
I. Infectious (673)		18.6
A. Rheumatic (320)	47.5	8.8
B. Bacterial (198)	29.4	5.4
C. Syphilitic (115)	17.0	3.1
D. Myocarditis (40)	5.9	1.1
II. Noninfectious (2,934)		81.4
A. Hypertensive, primary (2,556)	87.1	70.8
1. Myocardial insufficiency (468)	18.3	12.9
2. Coronary sclerosis (1,147)	44.8	31.7
3. Cerebral complications (apoplexy and thrombosis) (760)	29.7	21.0
4. Renal insufficiency (127)	4.9	3.5
5. Dissecting aneurysm of aorta (54)	2.1	1.4
B. Coronary sclerosis (156)	5.3	4.3
C. Pulmonary hypertension (141)	4.8	3.9
D. Congenital (71)	2.4	1.9
E. Miscellaneous (10)	0.3	0.2

Rheumatic heart disease.—In the group designated as rheumatic heart disease have been included those cases with valvulitis associated with acute rheumatic fever, those with valve deformities resulting from repeated attacks of rheumatic infection, and those in which death probably resulted from an adherent pericardium. There were 320 cases in this group, which was 47.5 per cent of the infectious cases and 8.8 per cent of the total cardiac group (Table 1). Among the cases of rheumatic heart disease were 169 males and 151 females (Table 2). The greatest number of deaths occurred in the fourth through the eighth decades among both males and females. The greatest differences between the sexes in the number of cases per 1000 autopsies occurred in the fifth and sixth decades. The number for the entire group was 21.1 for males and 29.9 for females. None of the differences were statistically significant.

Bacterial heart disease. — There were 198 cases of bacterial heart disease in this study (Table 1). This was 29.4 per cent of the infectious cases and 5.4 per cent of the total cardiac cases. Bacterial heart disease consisted of cases of primary and secondary acute, and subacute bacterial endocarditis. There were 130 males and 68 females in the bacterial cases. Among males, the greatest number of deaths occurred in the fourth, fifth and sixth decades, and among females in the fifth, sixth and seventh decades. The number of male cases per 1000 autopsies was greater than the number of female cases in the group, but the difference was not significant (Table 2).

Syphilitic heart disease. — The cases classed as syphilitic heart disease included those that exhibited syphilitic aortitis in which death was the result of the extension of the process affecting the heart or the result of destruction of the aorta. There were 115 cases in the category of syphilitic heart disease. This number of cases was 17.0 per cent of the infectious cases and 3.1 per cent of the total cases (Table 1). In this group of cases there were 97 males and 18 females with the greatest number of deaths among both males and females occurring in the fifth

TABLE 2
SEX INCIDENCE IN TYPES OF HEART DISEASE

	MALES (7979 Autopsies)		FEMALES (5036 Autopsies)	
TYPE OF HEART DISEASE	NO. OF CASES	NO. PER 1000 AUTOPSIES	NO. OF CASES	NO. PER 1000 AUTOPSIES
Rheumatic	169	21.1	151	29.9
Bacterial	130	16.2	68	13.5
Syphilitic	97	12.1*	18	3.5*
Myocarditis	26	3.2	14	2.7
Hypertensive	1557	195.1	999	198.3
Coronary Sclerosis without Hypertension	105	13.1	51	10.1
Pulmonary Hypertensive	108	13.5*	33	6.5*
Congenital	35	4.3*	36	7.1*

* Denotes a significant difference.

through the eighth decades. In all decades in which deaths occurred among both males and females, the number of cases per 1000 autopsies for males exceeded that for females. The difference occurring in the sixth decade and also the difference for the entire group was significant (Table 2).

Myocarditis. — Both parenchymatous myocarditis and interstitial myocarditis of unknown or obscure etiology, although these two types are distinctly different,[1] have been included in the myocarditis group. There were 40 cases in this category which was 5.9 per cent of the infectious cases and 1.1 per cent of the total cardiac cases (Table 1).

II. NONINFECTIOUS HEART DISEASE

There were 2,934 cases (81.4 per cent of the total cardiac deaths and 22.5 per cent of all autopsies) in the noninfectious heart disease group (Table 1).

This group of cases was composed of hypertensive heart disease, coronary sclerosis without hypertension, pulmonary hypertensive heart disease, congenital heart disease, and heart disease associated with thyroid disease, renal disease, and beriberi.

Hypertensive heart disease. — In the group of hypertensive cases have been included those in which death resulted from the effects of high blood pressure. Cardiac hypertrophy was present in almost every case, but many of the patients died from coronary sclerosis, cerebral hemorrhage or thrombosis, uremia, or a dissecting aneurysm of the aorta (Table 1). There were 2,556 cases in the entire group (87.1 per cent of the noninfectious cases and 70.8 per cent of the total cardiac cases). Of these cases, 1557 were male, and 999 female. The greatest number of deaths in both sexes occurred in the fifth through the ninth decades. In each of these decades the number of deaths per 1000 autopsies for females exceeded that for males, but none of the differences were statistically significant (Table 2).

Coronary sclerosis without hypertension. —The cases listed as coronary sclerosis without hypertension are those in which there was no history of hypertension and the heart weight was less than 400 grams in males and less than 350 grams in females. Coronary sclerosis was present in all of these cases and in most of them there was either a complete occlusion of one or more of the coronary arteries or an infarct of the myocardium with or without a coronary artery occlusion.

There were 156 cases in this group (Table 1). This number was found to be 5.3 per cent of the noninfectious cases and 4.3 per cent of the total cardiac cases. One hundred and five were males and 51 were females. The greatest number of deaths in both males and females occurred in the seventh and eighth decades. In the entire group, the number of cases per 1000 autopsies was 13.1 for males and 10.1 for females. None of the differences were statistically significant (Table 2).

Pulmonary hypertension. — The cases

listed as pulmonary hypertensive heart disease were those in which death resulted from cardiac failure, and in which there was hypertrophy of the right ventricle of the heart, a pulmonary condition which would cause pulmonary artery hypertension and no cardiac valvular deformities. There were 141 cases, which was 4.8 per cent of the noninfectious cases and 3.9 per cent of the total cardiac cases (Table 1). These 141 cases included 108 males and 33 females with the greatest number of deaths among males occurring in the sixth and seventh decades and in the seventh decade among females. In the entire group, the number of cases per 1000 autopsies was 13.5 for males and 6.5 for females. This difference was significant. (Table 2).

Congenital heart disease.—There was a total of 71 cases in the congenital heart disease group. This was 2.4 per cent of the noninfectious cases and 1.9 per cent of the total cardiac cases (Table 1). There were 11 cases each of a defect in the interventricular septum and a defect in the interatrial septum. A diagnosis of the tetralogy of Fallot was made in 8 cases, and there was a complete transposition of the great vessels of the heart in 6 cases. Coarctation of the aorta of the infantile type and a three-chambered heart each appeared in 5 cases. In 4 cases, there was hypertrophy of the heart with no other defects found. There were 3 cases of a patent ductus arteriosus, and 3 cases in which the pulmonary veins entered the right atrium. In 2 cases, there was dextroposition of the aorta; in 2 cases, coarctation of the aorta of the adult type; in 2 cases, pulmonary stenosis; and a two-chambered heart in 2 cases. Sub-aortic stenosis appeared in only 1 case, as did the following six defects: persistent truncus arteriosus, Eisenmenger's complex, persistent atrioventricularis communis, bicuspid aortic valve, atresia of the aortic valve, and atresia of the pulmonary valve.

There were 35 males and 36 females in this group of 71 cases (Table 2). Most of the deaths in both sexes occurred in the first decade. The number of cases per 1000 autopsies for the entire group was 4.3 for males and 7.1 for females. This difference was statistically significant.

Miscellaneous. — There were 10 cases of heart disease that were classed as miscellaneous. These cases were 0.3 per cent of the noninfectious cases and 0.2 per cent of the total cardiac cases (Table 1). In 3 of these cases death resulted from cardiac failure and the heart disease seemed to be caused by hyperthyroidism. Definite myxedema was present in 3 other cases; death resulted from cardiac failure, and at autopsy the heart was enlarged and dilated. There were 3 cases of renal disease, 1 of subacute glomerulonephritis and 2 of chronic pyelonephritis, in which death occurred from cardiac failure without definite uremia. There was 1 case in which cardiac failure seemed to result from beriberi.

COMPARISON WITH OTHER STUDIES

When compared with two other large autopsy series, one reported by Clawson [2] from Minnesota and the other by Holoubek [3] from New Orleans, the present ser-

TABLE 3
COMPARISON WITH OTHER AUTOPSY SERIES

Etiologic Types of Heart Disease	Present Series 13,015 Autopsies 3,607 Cardiac Deaths 1941 through 1947 Los Angeles	Holoubek 8,313 Autopsies 1,045 Cardiac Deaths 1935 through 1940 New Orleans	Clawson 30,265 Autopsies 4,678 Cardiac Deaths 1910 through 1938 Minneapolis
1. Hypertensive	70.8%	40.5%	55.5%
2. Arteriosclerotic	4.3%	20.7%	6.2%
3. Combined 1 & 2	75.1%	61.2%	61.7%
4. Rheumatic	8.8%	11.1%	18.6%
5. Bacterial	5.4%	2.1%	11.0%
6. Syphilitic	3.1%	18.2%	7.0%
7. Congenital	1.9%	2.2%	—

ies shows a larger incidence of hypertensive disease and of hypertension and coronary sclerosis combined (Table 3). The incidence of rheumatic heart disease in this report is less than one-half that in Minnesota and is slightly less than that in New Orleans. The incidence of bacterial heart disease in our group is approximately one-half that in Minnesota but is more than twice that in New Orleans. The percentage of syphilitic heart disease cases in Holoubek's series is quite high in comparison with the two other reports. This difference can probably be explained on the basis of the large number of Negro patients included in the Charity Hospital autopsy series. The larger percentage of rheumatic and bacterial cases in Clawson's report is undoubtedly due to the fact that rheumatic fever is more prevalent in the northern United States.

SUMMARY

A report of a number of cardiac deaths occurring among a large number of autopsies has been presented. The relative incidence of the different types of heart disease was determined as well as the age and sex incidence of these several types.

Periodic studies of this type are considered important so that the changing incidence of the types of heart disease may be recorded. If similar studies are done in the future in the same localities, we should be able to determine something of the effectiveness of new therapy in heart disease.

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CARDIAC ARREST

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ALEXANDRIA

Cardiac arrest is a sudden and grave complication which occurs almost exclusively in the operating room, necessitates prompt and vigorous treatment, and carries a poor prognosis for survival.

Its frequency varies in differently reported series from 1:1000 to 1:7500 operations. The vast majority of previously unexplained deaths in the operating room are now known to have been due to cardiac arrest, though unrecognized as such at the time. Stephenson [4] agrees, as do most observers, that its incidence is increasing because of the widening scope of cardiac and thoracic surgery, the increased use of many drugs and anesthetic agents for a single surgical procedure, the increased opportunity for the production of vagovagal reflexes by the use of different diagnostic methods, and finally because of a better understanding with consequently more frequent recognition of cardiac arrest.

The mechanism of this condition is thought to be due to the effect of vagal stimuli upon a myocardium which has been subject to decreased oxygenation. Anoxia renders the heart more susceptible to the depressive vagal action. The trigger stimuli can originate in the mucosa of either the respiratory or the gastrointestinal tracts or the pleura, from a variety of diagnostic or therapeutic procedures, or pathological conditions.[3] Anoxia may result from an obstructed airway, poor oxygen exchange, anemia, hemorrhage, shock, vascular occlusion, or a sudden fall in intracardiac blood pressure.[1] Other factors which may contribute toward cardiac arrest are an overdose of, or hypersensitivity to, anesthetic agents or the parasympatheticomimetic and pressor drugs, vitamin B deficiency, and endocrine imbalance.

Prophylaxis: Preoperatively, this should include the routine use of a barbiturate against possible anesthetic drug sensitivity, atropine as an anticholinergic agent, stomach lavage when indicated to prevent aspiration, the correction of anemia and malnutrition, proper cardiac evaluation with treatment if necessary, and the replacement of blood loss. During surgery,

* From Veterans Administration Hospital, Alexandria, Louisiana. Approved for publication by the Office of the Chief Medical Director of the Veterans Administration.

adequate airway and oxygenation should be maintained, the depth of anesthesia should be correct, and blood loss should be replaced.

Glenn [1] maintains that the absence of the carotid pulse is sufficient basis for making a diagnosis of cardiac arrest. Any further steps, such as auscultation or insertion of a needle into the heart for evidence of transmitted cardiac contractions is merely a waste of extremely valuable time. Since the brain can tolerate only a four-minute period of anoxia, speed is essential. As soon as the diagnosis is established, the following steps become mandatory:

(1) Restore circulation by cardiac massage by means of a thoracotomy through the left fourth intercostal space from the sternal border to the anterior axillary line or through the diaphragm in abdominal surgery. (2) Establish an adequate airway by insertion of an endotracheal tube and start artificial respiration. Massage should be maintained at a rate of 60 to 70 compressions per minute and kept up as long as there is a good palpable peripheral pulse and the patient's pupils remain constricted. Fibrillation may frequently be controlled by the use of an electric defibrillator,[2] or the intracardiac or intravenous injection of 5 to 10 millilitres of a 1 per cent solution of procaine.

Six cases of cardiac arrest occurred in approximately 6000 operations on our surgical service, an incidence of 0.1 per cent. Four of these were directly attributable to hemorrhage with consequent anoxia. Of these, 2 occurred during the course of pneumonectomies for carcinoma, 1 from a traumatic mediastinal hematoma, and 1 from rupture of a dissecting thoracic aneurysm. Cardiac arrest in the fifth case was noted following paravertebral block of the first three left thoracic segments and was presumably due to sensitivity to the use of 15 millilitres of 1 per cent solution of procaine, appearing as anaphylactic shock. In the sixth case, which will be described in detail, arrest occurred during an exploratory laparotomy.

Four of these cases were known to have had antecedent cardiac disease as noted in electrocardiograms taken on previous admissions or prior to surgery. In all of these cases, immediate steps as outlined previously were taken. Only 1 patient, our sixth case, could be successfully resuscitated.

CASE REPORT

The patient was a 58 year old colored male, readmitted November 6, 1953, for hypertensive cardiovascular disease and multiple perineal fistulae of twenty years duration and of undetermined origin. Previous biopsies and Frei tests were negative for the suspected lymphogranuloma venereum. His electrocardiogram showed myocardial damage and his hemogram, a severe secondary anemia.

His cardiac condition was stabilized, and on December 2, 1953, incision and drainage of a perineal abcess was done under pentothal sodium anesthesia. It was shown to be a malignant abscess in the nature of a colloid carcinoma of the entire retrorectal space. It was thought to be either metastatic or due to malignant degeneration of a lymphogranulomatous sinus tract. The hospital Tumor Board suggested a course of nitrogen mustard, intravenously, followed by a diverting colostomy to facilitate nursing care. Accordingly, he received four daily intravenous injections of 6 milligrams of nitrogen mustard.

On December 22, 1953, following premedication of luminal sodium, 12 grams, morphine sulphate, 10 milligrams, and atropine sulphate 0.4 milligrams, a laparotomy through a right paramedian incision was done. A metastatic nodule was found in the right lobe of the liver and there was evidence of a chronic pericholecystitis. At this stage, his pulse became imperceptible and respirations ceased. An endotracheal tube was immediately inserted and artificial respiration started. A left thoracotomy through the fourth intercostal space was rapidly done and the heart massaged in a bimanual fashion with one hand through either incision. Normal contractions returned after several falterings, with the systolic blood pressure rising immediately to 200 milligrams (of mercury). The operation was then abandoned, the wound being closed, leaving an intercostal tube in the left pleural cavity connected to an underwater seal. During the first twenty-four hours, his blood pressure was unstable and vasopressors intravenously were utilized. He was disoriented for a few days but eventually attained his former level of mentality, only to succumb to his disease two months later. An autopsy failed to reveal any further pertinent findings, and the final opinion was that it was a case of malignant degeneration of a lymphogranulomatous sinus tract, in spite of the negative Frei test.

In this case, it was thought that vagal reflexes were initiated by the handling of the intestines. This was superimposed both on an anoxia due to the secondary anemia and on a damaged myocardium. In retrospect, it would have been advisable to correct the anemia prior to surgery.

It is impossible to draw any conclusions from this small series except to stress the importance of heightened awareness of this condition, its prophylaxis, and its treatment. Only in this way can our salvage rate in cardiac arrest be improved.

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PANCREATITIS IN HOSPITAL EXPERIENCE *

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The clinical features of acute pancreatitis suggest a surgical abdomen, and patients so involved are usually hospitalized. The classic picture of acute hemorrhagic pancreatitis with shock and death has been expanded to include much milder forms which often go unrecognized and usually have a favorable resolution. Because of this, the actual incidence is uncertain, but has been estimated as 1 in 600 patients admitted to medical and surgical services.[1] These cases not infrequently present a confusing picture and may mimic other far more common entities such as acute mechanical obstruction, acute cholecystitis, or perforated viscus.

CLASSIFICATION

The expanded picture of this disease is due to wider and more accurate use of laboratory tests for pancreatic function, particularly amylase, which help to delineate the milder forms. Acute interstitial, edematous pancreatitis accounts for the majority of cases, having a relatively benign course without undue complications. Hemorrhage and necrosis of the pancreas give rise to more severe symptoms and signs with circulatory collapse and often a rapidly fatal outcome. In this group it becomes almost impossible to refrain from surgery, even in the face of hyperamylasemia. Complications (abscess or pseudocyst) may be diagnosed following an episode of acute pancreatitis.

ETIOLOGY

Biliary reflux as a result of obstruction of the papilla of Vater is responsible in some instances, particularly when a common channel for the pancreatic and common ducts exists. Epithelial metaplasia within the major pancreatic ducts, infection, trauma, and surgical procedures have been implicated. The common denominator is obstruction in combination with pancreatic tissue injury. While disagreement is present concerning how pancreatic enzymes are activated, it is generally believed that, once activated, these enzymes escape into the gland substance, peritoneal cavity, and bloodstream to produce the manifestations of the disease. The action of trypsin on the gland produces necrosis and hemorrhage, and tryptic ferments in the blood are responsible for shock and altered blood coagulation. Amylasemia in itself is not harmful. Lipases are responsible for fat necrosis and utilization of blood calcium.

CLINICAL FEATURES

The disease is most often seen in the ages between 30 and 60. Occurrence in children is rare. A larger proportion of patients than usually recognized is in the 60 to 80 year group. In this group hemorrhagic pancreatitis seems more frequent. The death rate is higher due to this and associated factors. Females appear to predominate only slightly over males. In a small series of cases of acute pancreatitis (17 patients) at the Veterans Administration Hospital in New Orleans, all were in

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the 30 to 60 year range and all were males.

Predisposing factors are important.[2] Forty per cent notice nonspecific gastrointestinal complaints, often of years' duration, and are frequently found to have associated biliary tract disease. In the present series 5 cases had associated cholelithiasis. Some 60 per cent have had previous attacks of abdominal pain, not requiring hospitalization, similar to the presenting pain. Six in the series had this history. Alcoholism seems a precipitating factor. Ten of the 17 patients had a history of heavy drinking. The acute pain may shortly follow food combined with alcohol. Pancreatitis can occur during pregnancy or in the postpartum period.

Pain is the most outstanding feature of acute pancreatitis. A classic picture of agonizing upper abdominal pain with signs of circulatory collapse is not the most common situation. Other patterns are described and have been classified on the basis of major manifestations of the illness[3]: (1) Textbook picture of a heavy meal and alcohol consumed by an obese middle-aged person followed by agonizing epigastric pain and shock; (2) symptoms and signs of acute cholecystitis; (3) a pattern resembling acute intestinal obstruction; (4) rupture of a viscus; (5) a palpable mass appearing after an acute abdominal episode; (6) nonspecific milder illness without a striking clinical history.[4] While these patterns are distinct, it may be more logical to consider the sequential nature of the clinical features more important than classification according to major manifestations of the illness.[4]

When severe, the pain of acute pancreatitis has a deep, boring, agonizing quality particularly unrelenting in its persistence. It is of lesser intensity in many instances. Usually located in the epigastrium, more often to the left of the midline, pain may be noted anywhere in the upper abdomen and frequently referred to the chest or back. Occasionally, it may arise in the lower abdomen or radiate into the flanks or become generalized. Its onset has no specific pattern, being sudden or slow, and often occurring during sleep.

It is obvious that while pain is the leading symptom in acute pancreatitis, it is by no means pathognomonic and may simulate the qualities found in other diseases. Usually its persistence and the difficulty in obtaining relief by opiates are helpful. The very variability of the pain pattern in pancreatitis should be the alert sign to consider the disease in these patients.

Nausea and vomiting rapidly follow pain and precede development of other symptoms. Occasionally, they may appear before pain becomes manifest. Vomiting only infrequently relieves the pain, tends to recur despite an empty stomach, and may be blood streaked. Massive hemorrhage can be encountered. During this early course of pancreatitis intestinal peristaltic sounds are quite active, and this is helpful in differentiating it from a perforated ulcer. Within twenty-four to thirty-six hours, ileus appears. When this is marked, abdominal distention becomes prominent. Such distention is more often seen in severe pancreatic necrosis. Three of the patients in the present series presented ileus; one of these died.

Constipation is a common finding; diarrhea occurs in about 10 per cent of patients. Jaundice is present in one-fourth to one-third of most series, more often as a physical sign or laboratory quantity than a symptom. Only 1 of the 17 patients had clinical jaundice.

PHYSICAL FINDINGS

Low grade fever (100 to 102°) occurs frequently and may be higher earlier in the disease. This can become septic with chills if suppuration supervenes. Blood pressure, when altered, is more hypertensive than at shock level and is not particularly related to age. Jaundice may be absent or so slight as to be overlooked clinically.

The most significant findings are in the abdomen. A noteworthy point is that they are often not as impressive when related to symptoms, particularly when necrosis is present. Marked upper abdominal rigi-

dity can occur, but is not unduly common. Abdominal tenderness is practically universal and may on occasion be the only sign present. It is most pronounced in the area of greatest pain, but in half the instances is found as a diffuse process. Rarely is point tenderness present. Maximum epigastric tenderness to the left of the midline or in the left upper quadrant is particularly important, as is left flank tenderness. Rebound tenderness is apt to occur and in the right lower quadrant leads to erroneous appendectomy. Ileus with abdominal distention has been mentioned earlier.

Patients with suppurative pancreatitis are more likely to develop a mass, usually about the fifth day of illness. Its incidence is approximately 15 per cent; one patient in this series had such a finding. It is a true abscess or pseudocyst, but can be inflamed, matted omentum. Cullen's sign (discoloration of the umbilical area) or Grey-Turner's sign (flank edema, induration, and discoloration) is due to extravasated blood. It is uncommon (2 to 5 per cent), appearing after the tentative diagnosis of pancreatitis has been established. Diaphragmatic irritation is not unusual, but pleural effusion and parenchymal lung involvement are rare.

W. H. C., a 37 year old, white patient was admitted to the hospital with a history of severe, unrelenting, boring upper abdominal pain of seven days' duration. This was preceded by moderate alcoholic ingestion. Shortly after development of pain, he became nauseated and vomited repeatedly. Opiates failed to provide relief. Physical examination showed a shocklike state, generalized marked abdominal tenderness with muscle spasm and ileus. A diagnosis of perforated peptic ulcer versus acute pancreatitis was made. Gastric suction, morphine, and intravenous fluids were given. The amylase test was unsatisfactory. The patient died within six hours after admission. Necropsy: Pancreas weighed 410 grams, the entire organ showing edema and many areas of hemorrhage. The pancreatic ducts were patent.

LABORATORY DATA

Serum amylase (diastase) is the most important single laboratory determination in diagnosing acute pancreatitis. In health the amylase level in a given individual is constant and ordinarily not subject to postprandial or diurnal variations. The level rises twelve to eighteen hours after onset of symptoms; (Probstein [5] believes the rise to begin within even less time), reaches its peak in twenty-four to forty-eight hours, and then rapidly falls to normal. The normal range depends on the particular laboratory doing the test, but the generally considered top level of normal is 150 Somogyi units. Levels between this and 1000 units need to be interpreted cautiously. Above this, the diagnosis is almost certain. Many clinicians calculate elevations in terms of so many times the top level of normal for any particular laboratory. The rise and fall of serum amylase is a drawback in using the test for diagnosis unless this variation is kept in mind. The height of this value cannot be used to classify the type of pancreatitis and extensive necrosis may give normal values. Finally, the test can be abnormal in salivary gland inflammation or obstruction, peptic ulcer perforation, pancreatic carcinoma, renal retention, and perhaps hepatic insufficiency and opiates. Renal retention is the most likely cause for confusion. Urinary diastase levels can be measured to eliminate this factor. Values above 900 units substantiate a diagnosis of pancreatitis. Hyperamylasemia was present in 15 of the 17 patients studied. The remaining 2 cases were verified at autopsy.

Serum lipase usually parallels amylase abnormalities, but reaches its peak somewhat later and is slower in returning to normal. A serious criticism is the twenty-four hour incubation needed in its determination at a time when decision as to surgery is so important. If both tests remain elevated, carcinoma of the head of the pancreas may also be suspected. Lipase was elevated in 4 of the 7 cases in which it was performed in the present series.

Innerfield and his associates [6] have described the antithrombin titer as a specific, valuable test for early diagnosis, following the clinical course, and evaluating prognosis in acute pancreatitis. The test

is an assay of the intravascular response between antithrombin and trypsin. It is also positive in carcinoma of the head of the pancreas when jaundice is of less than ten weeks' duration.[7]

Leukocytosis varies from 10,000 to 20,000. There is little which is specific for pancreatitis. Hematocrit measurements show early hemoconcentration and are a useful guide in fluid therapy. Albuminuria occurs frequently. Glycosuria and hyperglycemia are noted in anywhere from 10 to 44 per cent of cases. Disturbed sugar metabolism is more apt to occur in the severe forms of pancreatitis. Its severity increases as duration of the disease increases and subsides when the process resolves. Permanent diabetes develops occasionally, giving a much more serious prognosis. In a few instances a residual abnormal tolerance curve remains without frank diabetes. In the 17 patients, 9 showed glycosuria and hyperglycemia at the time of acute pain. One subsequently developed diabetes and 3 patients had residual abnormal tolerance curves.

A lowered calcium level is found when mobilization occurs into areas undergoing fat necrosis. If present, it is detected about the fourth to sixth day. Electrocardiographic changes can also occur in association with low serum potassium levels. Determination of serum electrolytes are mainly useful to serve as a guide to therapy. Diagnostic abdominal puncture for amylase measurement can be done in patients in whom necrosis is suspected. Hyperlipemia is reported; 2 in this series showed transient serum milkiness. X-ray examination of the abdomen is of as much or more value for its exclusion of free air as to describe the "sentinel loop" (an isolated distended loop, usually jejunum) early in the course of pancreatitis. Other radiographic findings to look for are enlargement of the duodenal loop or forward displacement of the stomach.

DIAGNOSIS

A general pattern can be described to visualize a picture of acute pancreatitis; clinical course of the disease lends further definition. Development of pain, followed by nausea, vomiting, ileus, and perhaps shock, is definite enough. Dramatic symptoms in relation to less impressive physical signs is an important point. Hyperamylasemia, hyperlipasemia, and increased antithrombin titer help. Yet diagnosis cannot always rest on these grounds alone: (1) The picture is not always so characteristic, and (2) anatomic location of the pancreas in relation to other organs more frequently the site of disease always raises the problem of differential diagnoses. Acute cholecystitis, severe gastritis in an alcoholic, perforated viscus, intestinal obstruction, vascular accidents, and sickle cell crisis (in Negroes) are commonly misleading. Index of suspicion in this problem is the anchor for correct solution.

P. K. H., a 32 year old, white clerk was admitted with a three day history of nausea and persistent vomiting accompanied by only mild upper abdominal pain. He had a similar episode two months previously, but at that time pain was the predominant symptom, finally localizing in the right lower quadrant of the abdomen. An appendectomy was done, revealing a normal appendix. Physical examination on the present admission revealed temperature of 99.8°F., B.P. 170/100, and mild, generalized abdominal tenderness. Serum amylase was four times the upper limit of normal. Transient hyperglycemia was found. He was treated conservatively and symptoms gradually subsided by the end of six days. Recovery was thereafter uneventful.

THERAPY

Therapy is controversial. The decided trend is nonoperative management. Morbidity and mortality rise when surgery is employed.[3, 4] Generally, overall mortality is 12 per cent (in the present series and in larger groups). The decision to stay out of an abdomen where severe pain occurs may be very difficult even in the presence of an elevated serum amylase. Milder cases offer less difficulty and, fortunately, constitute the majority of patients.

In the acute phase, relief of pain is paramount. Meperidine (demerol) is preferred by some to morphine. There are theoretical objections to both, but in practice both are used in full doses. In many

instances, these drugs will suffice. In others, they will not and splanchnic block, intravenous procaine, and epidural anesthesia [8] can be tried. These measures reduce or relieve pain, may reduce spasm of the sphincter of Oddi, and alleviate vasoconstriction. Nitroglycerin (grain 1/50 to 1/150), sublingually, or papaverine hydrochloride (2 grains, intravenously) are also used as adjuncts.

Gastric suction is almost universally employed to control vomiting, aid in suppression of pancreatic secretion, and to prevent or treat distention. Therapeutic effort at suppression of pancreatic secretion is nullified if the tube is allowed into the duodenum, the acid chyme thus stimulating the pancreas. Alkalis through the stomach tube can be used to aid in secretion suppression. Drug therapy is employed for the same purpose: atropine (gr. 1/75), methantheline bromide (banthine, 25 to 50 mg.) or hexamethonium salts (250 mg.) can be given intramuscularly.

Treatment of shock, dehydration, and electrolyte imbalance depends on the individual patient. Blood transfusions, glucose solutions, and suitable electrolyte replacement are necessary in varying degrees. Caloric requirements are met in part by daily intravenous glucose. However, insulin should not be used unless diabetes is present. Calcium gluconate (20 cc. of a 10 per cent solution intravenously), if serum levels are low, or for its "relaxing" effect, is commonly given. Serum albumin has been used for shock and its antitryptic effect. Experimentally, a soybean preparation is effective in counteracting trypsin.

Antibiotics in acute pancreatitis are difficult to evaluate. Penicillin alone is of little value. The broad spectrum antibiotics, preferably chlortetracycline (aureomycin), probably will serve the purpose better.

How long to continue these measures depends on patient response. Usually three to five days are necessary. During this time close cooperation between internist and surgeon is necessary. A suppurative mass, spreading peritonitis, cystic formation, obstruction of the biliary tract, or inability to establish a diagnosis of pancreatitis with reasonable certainty are indications for surgical intervention. Even in these circumstances, supportive measures for better preparation of the patient may well be indicated.

J. T. A., a 36 year old, white supervisor developed acute upper abdominal pain followed by nausea and vomiting while in military service. Surgery was performed for a ruptured peptic ulcer. None was found, but the pancreas was hemorrhagic and showed areas of necrosis. He developed an abdominal fistula which gradually healed over a period of eight months. He had no further symptoms until three years later, when he had a second bout of acute abdominal pain and nausea. Three days later a mass developed just to the right of the scar and ruptured. X-ray studies showed a pancreatic pseudocyst. This failed to close and the cyst was subsequently removed surgically.

To prevent recurring attacks of pancreatitis, careful search for biliary tract disease following subsidence of the acute process is necessary. While this does not guarantee a cure, it seems to reduce the incidence of further episodes.[9] The suggestion is also made that vagotomy helps in achieving the same end.

Management of any particular episode in recurrent pancreatitis is the same as outlined earlier. Chronic relapsing pancreatitis may result from repeated acute attacks, but is probably in a separate category with calcification, gland atrophy, and intractable pain usually found in chronic alcoholics. Steatorrhea, diabetes, and obstructive jaundice complete the picture. This leads to the idea that prognosis in acute pancreatitis is generally good and infrequently leads to chronic relapsing disease.

L. L. D., a 36 year old white laborer had had six admissions to the hospital for abdominal pain. He had had approximately 20 acute episodes of severe upper abdominal pain, nausea, and vomiting over a six year period. The pain gradually became intractable. He developed morphine addiction. Serum amylase and lipase levels even during acute episodes of pain did not rise to more than twice the normal range. Steatorrhea was mild. Permanent diabetes did not develop. X-ray

studies showed calcific densities in the pancreatic region. Laparotomy revealed no biliary tract disease. The pancreas was stony hard. In spite of vigorous therapeutic measures, (including repeated splanchnic blocks), pain gradually became so intractable that the patient committed suicide.

SUMMARY AND CONCLUSION

Acute pancreatitis is more common than many physicians realize. Increasing awareness of this possibility in patients with abdominal pain, nausea, vomiting and ileus will lead to proper evaluation. The physical signs of disease are often much less impressive than presenting symptoms. Cholecystitis, intestinal obstruction, viscus perforation and other entities are more common, and pancreatitis may present itself in one of these patterns. Serum amylase is the laboratory anchor for diagnosis. Antithrombin titers in places equipped to do them are usually extremely valuable.

Therapy, while controversial, is aimed at pain relief, suppression of pancreatic secretion, avoidance of distention, correction of shock and fluid imbalance, prevention of suppuration, and management of complications. The nonoperative attitude probably results in lowered morbidity and mortality, except in special circumstances. Once the acute attack has subsided, definitive biliary tract surgery, if needed, can be done. Chronic relapsing pancreatitis gives evidence of being a separate entity from the recurrences of acute pancreatitis. The overall mortality rate from acute pancreatitis is approximately 12 per cent, and the prognosis is generally favorable.

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CARCINOMA OF THE ESOPHAGUS

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SHREVEPORT

Because of recent pessimistic reports regarding the surgical treatment of carcinoma of the esophagus, all cases seen at Shreveport Charity Hospital (now Confederate Memorial Medical Center) since establishment of a Thoracic Surgery Service, were reviewed. This report covers the period from January 1, 1948, through December 31, 1953.

Only 19 cases of primary carcinoma were found. Eighteen cases were epidermoid carcinoma and one was not histologically proven. This one case had such typical x-ray findings, including a broncho-esophageal fistula, that it was included in the series, although esophagoscopy was not done. Cases of adenocarcinoma of the stomach invading the esophagus were excluded.

Histories were extremely variable. All complained of dysphagia which varied from a duration of five days to eighteen months. As a rule, the duration of dysphagia did not determine the operability of the lesion. The patient with the shortest history, dysphagia for five days, had positive biopsies from both esophagus and left bronchus and was obviously inoperable. The patient with the longest history, dysphagia for eighteen months, had a tracheo-esophageal fistula on admission and was also considered inoperable. The only long-term survivor had a history of dysphagia of three months' duration, and 2 recent patients on whom possibly curative resections were done complained of dysphagia for only three weeks. It was noted that a relatively short history of

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dysphagia was present in the most favorable cases.

Ten, or approximately one-half of the patients, complained of pain on swallowing. In 8 of these the pain was substernal, epigastric, or in the lower chest and was often described as aching. It was never severe. Two patients with carcinomas of the cervical esophagus complained of pain in the throat on swallowing. Of the 10 patients complaining of pain, 3 had frankly palliative resections, 1 had an anastomosis above a nonresectable tumor, and 1 had exploratory thoracotomy only.

Of the 9 patients not complaining of pain, 6 had exploratory thoracotomy and resection was carried out in 5 of these 6 cases. It should be noted that the 3 patients still living fall in this group. One has survived five years without recurrence and the other 2 are still living without evidence of recurrence but only for ten or nine months, respectively. It was interesting to note that the 2 palliative resections in this group without pain lived for almost exactly one year each. It then appears that pain gives a rather poor prognosis in carcinoma of the esophagus.

Weight loss was difficult to determine from history but seemed roughly to parallel the duration of dysphagia. It varied from no weight loss to a recorded loss of 40 pounds. From the appearance of some of these patients on admission, it seemed that they had lost considerably more weight than estimated. The 1 long-term survivor and the 2 recent cases who had possibly curative resections had lost no appreciable weight. This seems to be significant. However, 2 patients who had frankly palliative resections also complained of no weight loss. Otherwise, weight loss appeared to be related to the extent of the lesion and with the presence of complications such as broncho-esophageal fistula.

Coughing and/or strangling in attempting to swallow was a very significant symptom. This was noted in 5 patients. Four of those were proven to have either broncho-esophageal or tracheo-esophageal fistula and the other patient had a very high lesion in the cervical esophagus and strangling was apparently due to overflow. In addition, the larynx was involved and cervical metastases were present. All were inoperable.

Age at time of admission varied from forty-three to eighty-seven. Three-fourths of the cases occurred in the sixth and seventh decades. There were 7 colored males, 6 colored females, 4 white males, and 2 white females. No conclusions except that this disease is not uncommon in females can be drawn from this data.

Location of the lesions was as follows. There were 2 lesions located in the upper one-third of the esophagus, 11 located in the mid one-third, and six located in the lower one-third. Neither of the upper one-third lesions was operable, one having cervical lymph node metastases and invasion of larynx and the other having a tracheo-esophageal fistula.

Of the 11 middle one-third lesions, 3 had frankly palliative resections and 1 had possibly curative resection. Of the 6 lower one-third lesions, 2 had frankly palliative resections and 2 had a possibly curative resection. A by-pass procedure was done on 1 mid one-third lesion. These figures bear out the contention that lower one-third lesions are more amenable to surgery due to the fact that they are not in such intimate contact with vital organs.

Diagnosis was not difficult in this small group of advanced cases. The nature of the lesion was suspected from the history in all cases.

Fluoroscopy and x-ray studies revealed a suspicious lesion in all cases and, in addition, tracheo-esophageal or broncho-esophageal fistula were noted in 3 cases.

Esophagoscopy was carried out in every case except one with a demonstrable broncho-esophageal fistula. Of the 18 cases esophagoscoped, the lesion was visualized and a positive biopsy obtained in all but 1. The lesion in this case could not be visualized due to submucosal extension and stricture formation as proven on the resected specimen. Contrary to some re-

ports, we believe esophagoscopy to be very valuable in this disease. We believe that it should be carried out in every case of suspected carcinoma of the esophagus even if x-rays are negative. In 1 case seen at another hospital, a carcinoma was easily visualized and a positive biopsy obtained, although he had had two negative x-ray studies. We have, in several cases, removed old impacted foreign bodies on esophagoscopy in patients with typical histories and x-ray findings of carcinoma. We do believe, however, that exploration should be carried out in the absence of a positive biopsy if other findings indicate the probability of carcinoma being present.

Bronchoscopy should always be performed on those patients with middle and upper one-third lesions as involvement of trachea or bronchus indicates inoperability. We have, on occasion, obtained positive biopsies from both esophagus and bronchus in patients without demonstrable fistula.

We have undertaken exploration for possible resection on all cases not showing signs of inoperability. Palliative resections were done whenever possible so that the patient could swallow normally during the remaining period of his life. Whether or not resection, radiation, or a combination of both, will prove to be the treatment of choice in the future will have to be left to institutions with large series of cases to determine. We have, on one occasion, anastomosed the stomach to the esophagus above the lesion leaving the esophagus in situ with satisfactory immediate result. We have had no experience with plastic tube replacement of the esophagus.

Of the 19 cases, 1 refused exploration. Six cases were considered inoperable, 4 having tracheo-esophageal or broncho-esophageal fistula or invasion of bronchus proven by bronchoscopy. One patient was considered inoperable because of involvement of larynx and proven metastatic cervical nodes. Only 1 patient was considered inoperable because of extremely poor general condition. He also had auricular fibrillation. He was subjected to jejunostomy, later eviscerated, and expired. This was the only hospital death on original admission. The remainder of the inoperable cases all had gastrostomies and the 2 upper one-third lesions eventually had tracheotomies as well. Two patients were later re-admitted and expired. The remaining 3 were lost to follow-up and are presumed to be dead. The case refusing exploration was lost to follow-up.

Twelve cases were explored for possible resection. Excluding the case who refused exploration, this gives an exploration rate of 66 per cent.

Of the 12 cases explored, 3 were found to be so extensive that they were merely closed and gastrostomy carried out. There were no hospital deaths. Two had lesions invading the aorta and the third a lesion invading the left bronchus. All were explored through the left chest.

One case explored by the abdominal-thoracic route had an inoperable lesion invading the pulmonary artery. The stomach was brought up above the lesion and anastomosed to the esophagus leaving the lesion in situ. She was discharged three weeks postoperatively, swallowing satisfactorily.

Eight patients had resection of their lesions, 7 with esophago-gastrostomy and 1 with resection of lesion and end-to-end anastomosis of the esophagus. All patients recovered and were discharged, swallowing satisfactorily. Five of the 8 resections were frankly palliative in nature. Again excluding the patient refusing surgery, the resection rate was 44 per cent of the total group and 66 per cent of the explored group. There were no operative or hospital deaths.

All cases having palliative resections are known to be dead. We were somewhat surprised to find that one of these cases lived for eleven months, another for twelve months and another for fourteen months. Autopsy on 2 of these cases showed extensive mediastinal involvement but no involvement at site of anastomosis.

The other 2 lived for two and four months, respectively.

Only 3 cases had possibly curative resections; in other words, no gross tumor was left. One lower one-third lesion has survived for five years. One upper one-third lesion without lymph node involvement, is living and well only ten months. The other case, a lower one-third lesion with only one out of twenty-three lymph nodes involved, is living and well for nine months. Neither of the latter cases has survived long enough to claim a possible cure. Thus only 16 per cent of the total cases or 37 per cent of the resected cases were resected for possible cure.

Preoperatively, these patients are prepared by adequate hydration and blood transfusions, administration of antibiotics and mechanical cleaning of the esophagus if significant obstruction exists. Medical consultation for diagnosis and treatment of associated disease, so often present, is mandatory. One cannot hope to restore lost weight and these often emaciated-appearing individuals tolerate surgery surprisingly well.

Before 1952, all patients were explored through a left transthoracic approach. The resection of a high lesion requiring supra-aortic anastomosis was somewhat difficult from this approach, especially if it were adherent to vital organs. Since 1952, the abdominal-right-thoracic approach has become the procedure of choice for all lesions of the upper two-thirds of the esophagus. In fact, we prefer it for all lesions except those at or just above the cardia in which resection of a portion of the diaphragm may be necessary. It is our feeling that a much more thorough cancer operation can be done through the right thoracic approach as the lesion can be dissected free under vision at all times. It is also easier to remove sufficient esophagus above the lesion as a supra-aortic anastomosis is no more difficult than an infra-aortic one. In those cases in which it has been necessary to completely mobilize the stomach to the pylorus, the blood supply has remained adequate.

Removal of the upper portion of the stomach along with its lymph nodes is necessary in cases of low esophageal carcinoma as lymphatic spread is often present in the upper gastric nodes. Particular attention is paid to those nodes around the left gastric artery.

Open anastomosis using two layers of nonabsorbable sutures is carried out in all cases. Whether or not pyloroplasty is necessary has not been decided. We have been unable to see any difference in the postoperative course of cases with or without pyloroplasty.

Expert anesthesia is essential as often the opposite pleural cavity is entered deliberately or accidentally. Adequate blood replacement is made during surgery.

We routinely drain the pleural cavity with a catheter attached to an underwater drainage system with suction.

Postoperatively nasal oxygen is routinely given. The nasogastric tube inserted at the time of surgery is attached to suction. Blood and fluids are carefully regulated in order to provide a satisfactory urinary output but yet not overload the patient. We usually allow small sips of water the first postoperative day and remove the gastric tube on the second or third postoperative day. Fluids are then given freely, and gradually, soft and then solid foods are added. The postoperative course is often surprisingly smooth considering the magnitude of the procedure. Patients are allowed up as soon as chest and gastric tubes are removed and are discharged on regular diet two to three weeks postoperatively.

SUMMARY

1. Nineteen cases of primary epidermoid carcinoma of the esophagus were seen at Shreveport Charity Hospital (now Confederate Memorial Medical Center) during the years 1948 through 1953.
2. Twelve patients were explored giving an exploration rate of 63 per cent.
3. Eight patients had esophageal resection giving a resection rate of 42 per cent of the entire group and 66 per cent of the explored group.

4. Five resections were frankly palliative, only 3 patients had possibly curative resection (no gross tumor left). Possibly curative resections were then done in 16 per cent of all cases and 37 per cent of resected cases. One has survived five years postoperatively and 2 are living and well for ten and nine months, respectively.
5. There were no postoperative deaths in either the explored or resected group.
6. Two cases lived for one year after palliative resection and 1 for fourteen months with satisfactory swallowing.

CONCLUSION

Resection of the esophagus for carcinoma can be carried out with an acceptable mortality rate.

Further progress in treatment of this disease must be directed towards earlier diagnosis so that a larger proportion of patients may be submitted to possible curative resection.

From study of this small series, resection seems to offer possible cure in a small percentage of cases and definite palliation in others.

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THE IMPORTANCE OF UROGRAPHY IN ROUTINE EXAMINATIONS *

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The purpose of this paper is not as the title would suggest, that all patients be subjected to urography as a routine. Rather it is to emphasize that abnormalities of the genito-urinary tract may present such atypical and bizarre symptoms that in puzzling cases urography should be performed whether genito-urinary symptoms are present or minimal.

Most guesswork in urologic diagnosis ended with the introduction and improvement of the cystoscope and the invention of roentgen ray. Added to that we now have opaque media that can be injected intravenously in the vast majority of cases without any untoward reactions, so that one can obtain accurate studies of the upper urinary tract with proper preparation and technique. It is the combination of cystoscopy, retrograde pyelography, excretory urography, and laboratory studies that gives the urologist the necessary tools with which to practice accurate diagnostic urology.

Frequently in the history of a urologic patient urinary symptoms have been present in a minimal, or intermittent manner for many years. The patient has been told that he had "pus in the urine", treated with one or another of the urinary antiseptics, relief obtained and the urinary tract never investigated further. With the conclusion of the urological study, it is very often with regret that the patient has to be informed, to his amazement that a nephrectomy is necessary. And in some patients it might have been possible had the pyuria been investigated earlier that a kidney could have been saved by a plastic procedure or a "silent" stone removed before too much damage had been done to the kidney. Most cases of hematuria are usually investigated since the public in the last few years has been bombarded by the lay press that bleeding is a symptom of cancer. Many of these patients will request that their family doctor send them to a urologist. To assume that simultaneous hematuria and pyuria always means simple infection of the urinary tract is fallacious. It is just as wrong to assume that pyuria in itself always means ordinary bladder or upper tract infection. It has been our policy to obtain urograms on all patients who give a history of pyuria, or in whom infection is found at the time of examination. With or without accompanying genito-urinary symptoms naturally the female patient is questioned carefully whether or not the specimen had been a catheterized one. If there is any doubt at all the patient is advised to have urographic study. The following case re-

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port well illustrates what simple pyuria may mean.

S. E. H., white female age 45, was first seen on December 8, 1952, due to a finding of pyuria on examination by an internist. She saw the internist on December 4, 1952, because of diarrhea of a week's duration. She had absolutely no genito-urinary symptoms then but there was a question of past pyuria, and also questionable the fact that she had had excretory urograms at a local hospital several months prior to being seen by the internist, which she was told were normal. The hospital had no record of any urograms. The urological examination was completely negative except for a finding of a bacilluria. She was placed on terramycin, advised to have excretory urograms and was not heard from again after her urine was found sterile on December 12, 1952. The blood count and stool specimens were normal at that time. She returned again two years later on February 26, 1954, again being sent by the same internist, and again because of a finding of asymptomatic pyuria. The internist had been consulted because of chest pain. She objected to excretory urography because of the intravenous injection but consented to retrograde pyelography. This was performed on March 2, 1954, and a deformity in the upper pole of the right kidney was found (See Figure 1). Since the patient had an upper respiratory infection surgery was deferred until March 12, 1954, at which time a right nephrectomy was performed. At surgery a large upper pole mass was found. The pathological report was renal cell carcinoma without microscopic involvement of the renal veins. The chest x-ray preoperatively was not abnormal. At the present time the patient is doing well and has concluded a course of deep roentgen therapy. The prognosis is certainly guarded.

Patients having bladder neck obstruction or prostatism we believe should have urographic study. Again, it is true that usually such x-rays are found to be normal, yet on the other hand x-ray studies of the upper urinary tract frequently give a clue as to the cause of prostatic infection. In many cases prostatic calculi that are not palpable on digital examination can be seen on the plain flat film. Insofar as bladder neck obstruction is concerned, urography gives us a more complete picture. Dilated ureters, hydronephrosis and many other pathological entities can be discovered so that prior to surgery intended to relieve obstruction one can anticipate complications that otherwise would



Figure 1. Pyelographic deformity in the upper pole of the right kidney.

not result were there a normal upper tract. As an example of long standing prostatic infection the following case is reported.

J. M., white male age 54, was seen on March 2, 1954, with typical left ureteral colic. He had never had a prior attack. The only other pertinent points in his history were that of prostatic infection for which he had been massaged for nearly twenty-five years, that he had had liver trouble some five years ago, and ventricular tachycardia on many occasions. He had had many x-ray studies but was not certain as to whether urography had ever been accomplished. He had moved from one town to another and frankly admitted that unless he were quite ill he would not consult a physician. The physical examination revealed exquisite tenderness in the left costovertebral angle and a thickened left seminal vesicle. The laboratory studies were within normal limits except for many red blood cells in the urine. The patient was hospitalized and a K.U.B. on admission revealed a shadow 1 by 5 cm. in line with the left upper ureter. Excretory urograms performed on March 3, 1954, confirmed the finding of a calculus in the left upper ureter with incomplete block. But in addition an atrophic right kidney with practically no function was found (See Figure 2). On March 4, 1954, left ureterolithotomy was performed and the patient had an uneventful course. The blood



Figure 2. Calculus in left upper ureter and an atrophic right kidney.



Figure 3. Right retrograde pyelogram revealing upper pole deformity.

calcium, phosphorus, and uric acid levels were normal. The stone proved to be calcium oxalate. This patient was indeed fortunate that he had a symptomatic calculus, for it could have been of the so called "silent" variety and produced irreparable damage to what is practically his only kidney.

As an unusual example of upper tract disease with bladder neck obstruction the following case is cited.

E. G. E., age 46, was seen on September 23, 1949, because of intermittent bouts of frequency and urgency of one year's duration associated with difficulty on urination. The complete urological examination was negative. The prostate was normal in size and free of pus on the expressed secretion. To rule out stricture a number 18 F urethral catheter was passed with ease. The patient was advised to have excretory urography and cystoscopy. Cystoscopy revealed a vesical neck contracture without any changes in the bladder musculature. Conservation was advised for the bladder neck obstruction. Initial urography was not diagnostic. Repeat urography revealed a peculiar dye pattern on the right side. The left kidney was normal. The patient was advised to have a right retrograde pyelogram and a diagnosis of cyst versus tumor was made (See Figure 3). On December 9, 1949, the right kidney was exposed and a small tumor found in the upper pole. Nephrectomy was performed. The pathological report was renal cell carcinoma. The renal veins were microscopically free of tumor. The preoperative chest plate was normal. The patient is still alive and well, and regular studies for metastasis have been negative.

Gage and Floyd[1] have shown that lesions of the genito-urinary tract frequently will produce intra-abdominal symptoms so that many times surgery is performed on the intestinal tract with the resulting sacrifice of abdominal organs, only to be revealed later that the real cause of the symptoms was a lesion of the kidney or ureter. In a review of the literature they found that 25 to 30 per cent of patients with disease of the upper urinary tract have had previous abdominal operations for nonexisting intra-abdominal lesions. They explain the similarity of symptoms on the basis of similar nerve, blood, and lymphatic supply. The sympathetic nerves to both systems have a common origin too; that is, the celiac ganglion and the celiac plexus. Another reason they believe is the close anatomic association between the upper urinary tract and the sensory nerve supply of the

parietal peritoneum. They further state that in 30 to 40 per cent of cases with genito-urinary disease the signs and symptoms are abdominal and that less than 50 per cent of patients with urological disorders present classical genito-urinary findings. They recommend because of these facts that urography should be a routine procedure in all patients forty years of age or more.

The following two cases illustrate the aforementioned facts very well. Both of these patients had hypernephromas which were not diagnosed preoperatively despite complete genito-urinary studies including urography. Neither of these cases had typical pyelographic deformities. In the first the pyelograms were normal and in the second only a mild hydronephrosis was demonstrated.

S. C., white female age 46, was first seen May 24, 1949, with severe upper abdominal pain. She was cold and clammy and had a feeble rapid pulse. There were no genito-urinary symptoms. The entire abdomen was tender and rigid. Laboratory studies were within normal limits. She was also seen by a general surgeon in consultation. A diagnosis of acute pancreatitis was made. Retrograde pyelography accomplished May 25, 1949, revealed no abnormalities except for fixation of the left kidney (See Figure 4). Left lateral retrograde pyelography on May 26, 1949, revealed no displacement of the kidney (See Figure 5). Three days later G. I. series revealed upper displacement of the stomach and downward displacement of the colon. A large cystic mass could be palpated at this time. Exploratory laporatomy was performed on June 1, 1949, by a general surgeon. The preoperative diagnosis was pseudocyst of the pancreas; the postoperative diagnosis the same. A large soft mass was found filling the left omental bursa. This was adherent to the gastrocolic omentum, transverse mesccolon, the tail of the pancreas and the kidney. Exposure was inadequate and a combined thoraco-abdominal approach had to be employed. During the dissection which required splenectomy, and resection of the tail of the pancreas, a necrotic cavity was found around the midportion of the left kidney and a nephrectomy was performed. The pathological report of the kidney was hypernephroma. The spleen was normal. The pancreas revealed hemorrhage with interstitial infiltration. The patient received deep therapy postoperatively. She is still alive and well and without evidence of metastasis.



Figure 4. Retrograde pyelograms without deformity.



Figure 5. Left lateral retrograde pyelogram without displacement of kidney.

T. E. M., white male age 66, first seen August 2, 1949, with a history of increasing constipation and a feeling of fullness in the left upper abdomen. The genito-urinary history and physi-

cal examination were not abnormal except for chronic prostatitis. Excretory urograms August 3, 1949, revealed a normal right kidney with a mild left hydronephrosis. August 5, 1949, left retrograde pyelogram (See Figure 6) again re-



Figure 6. Left retrograde pyelogram revealing mild hydronephrosis.

vealed only a mild hydronephrosis. The chest x-ray on August 4, 1949, revealed an inflammatory lesion in the left upper lobe. The barium enema on August 8, 1949, revealed marked delay in emptying of the colon, acting like an obstruction in the retrosigmoid region. It was decided to observe the patient for a while and on August 26, 1949, he returned with signs of partial intestinal obstruction. An exploratory laporatomy was performed August 30, 1949, by a general surgeon, and a normal intestinal tract was found with a huge kidney on the left side and a mass involving the upper pole of the left kidney and a metastatic liver nodule. A combined thoraco-abdominal approach had to be employed. Splenectomy, removal of the liver nodule and a left nephrectomy performed. The lesion in the left lung was a metastatic nodule. The kidney weighed 890 grams and histologically a hypernephroma was found. The patient left the hospital October 12, 1949, but died three months later with generalized metastasis.

CONCLUSIONS

An attempt has been made to stress the importance of urography as part of the general examination. If one bears in mind the fact that all patients with slight urologic manifestations, vague abdominal complaints, and unusual symptoms be subjected to a complete urological study including urography, then more accurate diagnosis will be made. Five cases have been presented to support this viewpoint.

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DISCUSSION

Dr. Eugene St. Martin (Shreveport)—There are many indications for urography. Dr. Silvey has emphasized its use in recurrent infection and in hematuria. He has stressed its importance in vague abdominal complaints with or without urinary findings. The cases he cited are lesions to be remembered and illustrate so well the need for early diagnosis if surgery is to be corrective.

Urography or the roentgenological study of the urinary tract by the introduction of opaque media is available to every physician—at least in a limited way. To do excretory urograms or cystography requires no special equipment except films of good quality. The general man, apart in his small clinic, should endeavor to become proficient in reading excretory urograms in order to rule the urinary tract in or out in the differential diagnosis of a patient with acute or chronic abdominal pain. Obscure masses may be localized to the retroperitoneal space or not by lateral pyelograms.

Excretory urography should be routine in the evaluation and management of ureteral colic due to calculi. Delayed films are extremely valuable in the early nonfunctioning kidney to pinpoint the obstruction as the dye comes through, and oblique films cinch the diagnosis when there is question about the true diagnosis of an opaque shadow in the bony pelvis.

The investigation of the hypertensive patient is incomplete without excretory urography which is not only an excellent renal function test but may demonstrate unilateral atrophic pyelonephritis, the Goldblatt phenomenon, or a suprarenal pheochromocytoma. These conditions usually require supplementary roentgenologic studies such as aortography and presacral air insufflation and indicate remedial surgery.

Fever of unexplained origin, failure of infant to gain weight, congenital anomalies in the genitourinary system, and the investigation of albuminuria are other important indications for urography to fully evaluate the patient.

Cystography or the roentgenological study of the bladder after the introduction of contrast media is both useful and easy. This is a routine for the patient with the fractured bony pelvis. Cystogra-

phy is particularly informative in pediatric urological problems. In the infant or child, the serious consequences of bladder neck obstructions are represented by enlarged bladders, diverticuli, regurgitation up the ureters, and residual urine in the gravity or voiding cystogram. The latter procedure cannot be stressed enough for children with abnormal voiding symptoms and is easily done by simply filling the bladder to capacity with dye then taking a film of the abdomen before and immediately at the end of micturition.

In conclusion, more frequent use of urography will provide earlier urological diagnosis with maximum conservation of renal tissue.

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A SIMPLE PSYCHOLOGICAL APPROACH IN PREPARING FOR CHILDBIRTH * †

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Four years ago a program was initiated in our office in an effort to prepare our patients better for pregnancy and labor. It seemed logical to use the medium of mothers' classes in order to accomplish more than was possible in routine office visits.

There were several factors that led us to believe that patients could benefit from this type of aid on our part. It was realized that the average patient has little or no understanding of her anatomy or what happens during labor. Most women are unaware of what could be expected in the hospital during labor and delivery or what part would be played by both the patient and the physician to accomplish a successful outcome. It was impressed on us from time to time that private patients are often less well informed than the average patient at Charity Hospital who has had ample time to sit and talk at length with a medical student. Then on occasion we would encounter the patient who, because of extreme curiosity, would consume long periods of office visits with questions. Realizing that these were common questions which should be answered for all, it was decided to supplement prenatal care with an information program for our patients.

Prior to this time reliance had been placed on various booklets and printed matter. Not only did we find disagreement with many of the statements in the various publications available, but they seemed a most impersonal means of transmitting information. Much of such material undoubtedly made a quick trip to the waste basket after leaving our office.

Is there a need for patient instruction and better understanding on the part of the patient? Should one treat only the growing uterus, its contents, and physical changes resulting therefrom; or should one also be attentive toward the emotional aspects of pregnancy and labor?

This question has been answered by many authorities in the past. For example, Greenhill states,[1] "The most powerful element that interferes with the happy normal course of motherhood is fear." Again, Eastman states,[2] "There can be no doubt that the attitude of a woman toward her confinement has a considerable influence on the ease of her labor."

The foregoing statements of both teaching authorities would indicate agreement for the need of a medium to calm the fears of a patient, which in turn would have a direct effect on the conduct of labor. We feel that the woman who is well informed and who can rationalize, is apt to have a more normal mechanism of labor. Reynolds,[3] having noted the occurrence of more normal labor following sedative drugs, hypnosis and even *suggestions*, feels that, "there is a mechanism whereby the relief of pain by any of these means may benefit the pattern of uterine contractions."

The idea is not new, as is noted by the following quotation from Aristotles' *Complete and Experienc'd Midwife*, printed in London in 1700:[4] "Others protract the birth, by reason of their timidity, and

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extream fear of some farther pain than what she at present feels; such must be advised, that it is the will of the Author of our beings that it should be so; and that her fears are beyond what she will feel; and that others have gone through greater pains than she is like to have: such comfortable words being oft-times a great support to the labouring woman. If she be melancholy, (*for sometimes difficult labour arises from thence*) endeavor by all means to make her cheerful." In more recent times Grantly Dick Read[5] had enlarged upon these same ideas.

It seemed then, that the logical approach in a busy practice was to attempt to meet groups of patients and their husbands for informal discussions regarding pregnancy, delivery and the newborn. To this end an initial program was begun for patients and their husbands who present themselves at planned evening meetings in the office for a forty to fifty minute talk followed by a discussion period during which they are encouraged to ask questions. From its onset the program met with success.

MATERIALS

Whereas some programs conduct separate classes for expectant mothers and fathers, and others develop into time consuming and frequent meetings or classes, the following plan has met the needs of our patients.

The patients, particularly those in their first pregnancy, are invited to attend a series of three classes, which are conducted at intervals of two to three weeks throughout the year.

The first class is begun with a discussion of the diagnosis of pregnancy (Table 1.) which leads quite naturally to a description of the changes occurring in the early months of pregnancy. The various pregnancy tests and their reliability is mentioned. This is followed by general comments concerning the hygiene of pregnancy with particular reference to proper diet, the importance of weight control, proper attitude, and various superstitions. The various laboratory tests and reasons for such examinations are discussed. At this time representative x-ray films are shown, and explanation is given of their use in diagnosing multiple pregnancy and fetal position and for obtaining pelvic measurements. The growth of the fetus with its various activities and functions is then described. Slides[6] are shown depicting the female reproductive system, the uterus and its growth during pregnancy, and the fetus, membranes, and placenta. This is followed by a general discussion period.

TABLE 1
CLASS 1: THE CHANGES OCCURRING WITH PREGNANCY

1. Diagnosis of Pregnancy
 a. Reliance on menstrual history
 b. Symptoms of pregnancy
 c. Biologic tests
 (1) Value
 (2) Indication for use
 d. Fetal movements
 e. Appearance of fetal heart tones
2. Hygiene of Pregnancy
 a. Proper diet
 b. Proper attitude
 c. Importance of weight control
 d. Superstitions
3. Lab Work
 a. Nature of tests
 (1) Blood studies
 (2) Urinalyses
 (3) X-rays
 b. Indications for tests
4. Fetal Growth During Pregnancy
5. Slides

The second class (Table 2.) is concerned with labor and delivery. At this lecture the first item discussed is the onset of labor and how it may be recognized. Instructions are given as to when to call the physician, when to go to the hospital, how to reach the maternity division, and what happens at the hospital. Explanations are given concerning the immediate separation of the patient from the family for the usual preparation and the later separation as the time for delivery approaches.

The parts played by both the physician and the patient are discussed. At this time the role of analgesia and anesthesia is explained with a definite effort made to assure the patient that the *reasonable*

TABLE 2
CLASS II: LABOR AND DELIVERY

1. Labor
 a. Onset
 b. Duration or length of labor
 c. Possibility of early rupture of membranes
 d. How to recognize labor
 e. Symptoms indicating need to consult physician
 f. When to go to the hospital
2. What happens in the hospital
 a. Mechanics of entering
 b. Preparation by nurses
 c. When the patient will be separated from her family
3. Delivery
 a. Analgesia and anesthesia
 b. Normal delivery
 c. Use of forceps and episiotomy
 d. Variations from normal
 (1) Breech
 (2) Cesarean section
4. Appearance of newborn
 a. Conditions under which it will first be seen by family
5. Slides

use of either or both will have no ill effect on the infant. Delivery is now presented with its variations. The use of forceps and episiotomy is defined as is the advantage of their use, and here an actual pair of obstetrical forceps is displayed for their orientation. Again, are shown slides depicting labor and delivery followed by general discussion.

The third and final class (Table 3.) is concerned with the newborn baby and is conducted by one of the supervising nurses from the newborn nursery. Her lecture includes these items of information: the hospital care of the infant, its routine nursery care, the visiting routine, and the identification safeguards. Infant feeding is explained, including both breast and artificial media. Detailed indoctrination is then given concerning the care of the newborn at home. This feature has been of extreme value to the new mother since it tells her of such items as, the behavior of the normal infant, care of the cord, preparation and execution of the bath and mention of nursing bottles and diaper hygiene. To aid this discussion, a manikin doll, tub, bottles, and literature are utilized.

TABLE 3
CLASS III: THE BABY

1. Hospital Care of Infant
 a. Routine nursery care—especially immediate care
 b. Visiting—When baby may be seen by family
 c. Identification safeguards
2. Infant feeding
 a. Breast
 b. Artificial
3. Care of Newborn at Home
 a. Behavior of normal infant
 b. The bath
 c. The cord
 d. Bottles
 e. Diapers
4. Movie on preparation of formula *

* Furnished by Carnation Milk Company.

Before the general discussion period a movie * on preparation of infant formulae is shown.

After having had this plan in effect for the past four years, one might ask has it proved worthwhile? Also, how has it affected the course of pregnancy and labor in the patients who have taken advantage of the program?

We feel that these patients are, as a group, better behaved. Certainly there is more rapport both with them and their families. Although there is no statistical proof available at this time, we are convinced that labors of well oriented patients are more effective. Although sedation is not denied, the actual need for or demand for sedation is reduced. The average patient in this group receives 75 or possibly 100 mgm. of demerol per labor and many are maintained comfortably on only 50 mgm.

Remarks are frequently made by the birth room personnel concerning how well behaved and easily managed these women are. Prolonged labors are a rarity. They maintain a wholesome attitude in the postpartum period. One is rarely annoyed with a troublesome family, and the majority have expressed their appreciation for the education. They know what to expect and, for example, are not too

* Furnished and shown by the Carnation Milk Company.

alarmed at such a simple but frequently disturbing occurrence as molding of the baby's head.

It is suspected that in addition, these women have a more normal acceptance of their babies with less apprehension but it is too early to present statistical proof.

CONCLUSION

After a period of four years of conducting a simple education program for expectant mothers it has been our experience that, with a minimal effort on the part of the obstetrician, a most satisfying result may be obtained in patient response. It has proven to be a rational psychological approach in preparing women for childbirth.

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SMOKING AND CANCER

Since the day that doctors and patients began to observe that smoking tobacco would intensify the cough of an acute respiratory infection and greatly aggravate a chronic cough, smoking has been under suspicion as having deleterious effects on those who indulged, particularly in regard to the respiratory system.

In the last twenty-five years, various articles have appeared which have aroused an increasing degree of suspicion. Noteworthy among these was that of Pearl [1] using statistical methods on data furnished by life insurance companies, who reported that "the smoking of tobacco was statistically associated with an impairment of life duration and the amount or degree of this impairment increased as the habitual amount of smoking increased."

As the number of deaths from cancer, particularly of the lung, rose in the past three decades, numerous investigations have sought for further proof of the suspected relationship between cancer and smoking, particularly lung cancer. Hammond and Horn [2] in a two and a half years' study, sponsored by the American Cancer Society, have given the results of a follow-up on 187,766 white men, smokers and nonsmokers, between the ages of 50 and 69. Their report is the most conclusive evidence that has been brought to bear on this important subject up to the present time. In this group, 4,854 deaths occurred in the two and a half year period. The comment of the authors, which is supported by elaborate data in tables and charts, is that death rates from diseases of the coronary arteries, and from cancer, are much higher among men with a history of regular cigarette smoking than among men who have never smoked. The gross mortality was 52 per cent more in smokers than would have been expected among the nonsmokers. They further state that the death rates increase with the amount of cigarette smoking. Eight hundred and forty-four deaths were from cancer; 167 being indicated as cancer of the lung. The death rate from lung cancer was much higher among men with a history of regular cigarette smoking than among men who had never smoked regularly. The authors conclude that there is a definite association between smoking habits and death rates. They state that they are of the opinion that the association found be-

[1] Pearl, R.: Tobacco smoking and longevity, Science 87:216, 1938.

[2] Hammond E. C., and Horn, D.: Relationship between human smoking habits and death rates, J.A.M.A. 155:1316, (Aug. 7) 1954.

tween regular cigarette smoking and death rates from diseases of the coronary arteries, and between regular cigarette smoking and death rates from lung cancer, reflects a cause and effect relationship. This investigation is a massive scientific undertaking to establish the facts in a controversy that has been smoldering for decades, and the conclusions seem irrefutable.

The arguments against the acceptance of these conclusions seem to come from the common observation that many smokers continue the habit through life but do not get cancer in the lung, or anywhere else. Even so, this is no explanation for the increase in the over-all death rate as observed sixteen years ago by Pearl and in the recent article by Hammond and Horn. A further explanation, which could scarcely be regarded as valid when the figures deal with 187,000 individuals, is that the nonsmokers are careful, conscientious people who take better physical care of themselves than those who are willing to indulge in the pleasures of smoking. This argument is futile when the numbers concerned in the investigation are considered.

It is reasonable to suppose, therefore, that in some way the effect of smoking arouses in its adherents the cancer potential when such exists, and if sufficient time is allowed to lapse, this cancer potential comes into expression.

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DR. PAUL TILMAN TALBOT
1882-1954

Dr. Paul Tilman Talbot died in Tucson, Arizona, on November 11th, 1954, ending a long career as a successful physician, a highly respected and efficient officer of the Louisiana State Medical Society, and a worthy citizen. He was 72.

Dr. Talbot was Secretary-Treasurer of the State Medical Society for thirty-two years. During this time he endeared himself to successive generations of State officers, committees, and the individual members of the Society. He was noteworthy for the admirable manner in which he handled the problems of his office and the skill with which he was able to bring to bear his mature judgment, his consideration of others, and his knowledge of the problems of organized medicine. During the long period in which he served our membership, he left a trail of friends in the state, regional, and national organizations. Their concern and interest followed him through the years and into retirement.

"Tim," as he was known to the doctors of Louisiana, was born in 1882, in Summerfield, Louisiana, Claiborne Parish. He was educated in the local schools, and in the high schools of San Marcos, Texas. He received his premedical education at Texas A. & M. College, and graduated from Tulane University School of Medicine in 1908. After serving one year's internship in Shreveport, and two years' internship in Charity Hospital at New Orleans, he began the practice of medicine in New Orleans, and later specialized in gynecology and obstetrics.

During World War I, Dr. Talbot served as a captain in the Medical Corps.

In 1918, he was elected to the secretaryship of the Louisiana State Medical Society. In 1943, when the affairs of our organization had become greatly increased, and when the threat of socialized medicine required the fulltime services of an executive secretary, he was made fulltime Secretary-Treasurer, which position he held until his retirement in 1950.

In addition to this position with the State Society, Dr. Talbot was business manager of the medical journal of the Louisiana State Medical Society, then the New Orleans Medical & Surgical Journal, and contributed greatly to its progressive development and financial stability.

Dr. Talbot will be remembered by his friends and our fellow members for his gracious manner and his tactful approach in all the affairs that concerned our organization. His devotion to duty and his

sincerity of purpose are appreciated by the entire membership.

Dr. Talbot is survived by his three daughters, Mrs. Robert Yeargain and Mrs. John W. Wilson, both of New Orleans, and Mrs. E. P. Larroux, Bay St. Louis, Mississippi, to whom the profession extends its most sincere condolences.

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ORGANIZATION SECTION

The Executive Committee dedicates this section to the members of the Louisiana State Medical Society, feeling that a proper discussion of salient issues will contribute to the understanding and fortification of our Society.

An informed profession should be a wise one.

ENOCH McLAIN TOLER, M. D.
1874 - 1954

Dr. E. M. Toler, at the age of 79, passed away at Clinton, Louisiana, his home town, on October 21, 1954. Dr. Toler was one of our most ardent and faithful members, always looking after the interests of our Society and organized medicine.

Dr. Toler was born on a farm in Amite County, Mississippi, October 29, 1874. He graduated from Vanderbilt Medical College in 1900 and took a postgraduate course at Tulane University School of Medicine, 1905-1906. He practiced medicine in East Feliciana Parish since graduation and was loved and respected by all groups of citizens in his home Parish. His opinion and advice, be it medical or otherwise, were respected by the good citizens of East Feliciana Parish. His political opinion and counsel likewise were respected and appreciated by his fellow legislators who served with him in the House of Representatives for eight years and in the Senate for ten years. He will be missed in these two legislative halls, not only by his fellow legislators but by the members of the Louisiana State Medical Society. Dr. Toler's services to the medical profession can never be properly estimated or evaluated and these services will never be forgotten by men of medicine in Louisiana.

The citizens of East Feliciana Parish not only repeatedly returned him to the legislative halls in Baton Rouge but honored him with the Coronorship of his Parish for over twenty years.

Dr. Toler was also a leader in religious and financial affairs in his home town of Clinton.

He was presented with a pin as an award for fifty years of medical service to the people of Louisiana in 1951 and was honored by his profession by being selected as the "Outstanding General Practitioner of Louisiana" for 1953 and was recommended to the American Medical Association for recognition as the "Outstanding General Practitioner of the United States" for 1954.

Dr. Toler was elected in 1912 by the members of the Bi-Parish Medical Society of East and West Feliciana Parishes as its Secretary for life, showing the esteem and love which his home doctors felt for him.

Dr. Toler was a member of the American Medical Association, the Louisiana State Medical Society, the Southern Medical Association, the Sixth District (Louisiana) Medical Society and the East and West Feliciana Bi-Parish Medical Society.

The members of the Louisiana State Medical Society will deeply mourn Dr. Toler's passing and extend to his widow and family their deepest sympathy.

HELP OUR MEDICAL SCHOOLS

The following is a resumé of the present status of the American Medical Education Foundation, prepared by Mr. Hiram W. Jones, Executive Secretary of the A.M.E.F.

"In order that all our state committees may reappraise their efforts for the current year, we have made a study of the Foundation's program so that you may know where you stand in relation to the previous year's AMEF campaign in your state.

"In over-all income and contributors, the Foundation is ahead of last year's totals, however, we are still short of the estimated $1,200,000 income figure that was projected earlier this year. We have received a total of $1,051,000 from more than 17,000 contributors. Since we did not pass the million dollar mark until late in November last year, we are ahead in our income record of last year by about 30 days. In short, we have an estimated 30 days to surpass our 1953 record.

"During the first ten months of 1954, six states have exceeded their 1953 marks in both dollars raised and contributors. They are: ARIZONA, CALIFORNIA, DISTRICT OF COLUMBIA, TEXAS, WISCONSIN and HAWAII.

"Four other states have increased their dollar income over 1953 but have not exceeded their total number of contributors. They are: ARKANSAS, LOUISIANA, MASSACHUSETTS and VIRGINIA. Five states exceeded totals in the number of contributors but not their dollar income over the previous year. Included are: ALABAMA, ILLINOIS, OKLAHOMA, SOUTH CAR-

OLINA and WYOMING. RHODE ISLAND and ALASKA remained even with their 1953 records in contributors' statistics.

"During these closing weeks of 1954, your concentrated efforts at the state level can help us reach the desired income before the close of the current campaign. After careful study of the new tax laws which were recently put into effect, we prepared a new tax folder which will be included in our national mailing to the entire membership of the American Medical Association. Specifically designed for A.M.E.F., the new tax folder points out tax savings by making a contribution to the Foundation before the close of the 1954 year. And, at the same time, physicians who contribute to the Foundation will assist materially in our efforts to reach our goal before the end of the year. (The national tax mailing will be in the hands of the entire A.M.A. membership not later than November 15.)

"We hope that you will find it possible to exert every effort to match your state's previous income record. If every state chairman will get behind the AMEF drive in these last weeks of '54, we will undoubtedly attain our $1,200,000 goal by the end of this year. LET'S ALL PULL FOR A NEW RECORD IN 1954.

"Physicians from Louisiana have accounted for 42 contributions totalling $2,199.58. Louisiana has a minus 3 over 1953 records in contributor statistics and a plus $1,026.58 in total income."

HOW THE NEW TAX LAW AFFECTS YOUR CONTRIBUTIONS TO THE AMERICAN MEDICAL EDUCATION FOUNDATION

The most outstanding feature of the new tax law is the encouragement it gives to the system of private enterprise.

Congress, in establishing the new income tax structure, has invited you to invest your dollars in worthy charities, thereby saving money through the full utilization of federal tax exemptions.

The American Medical Education Foundation has prepared a pamphlet to help you in getting the full benefits of 1954's sweeping tax law changes (the most advantageous we have had in many years) and at the same time enable you to make the greatest contribution to your American Medical Education Foundation at the minimum cost.

The American Medical Association and the American Medical Education Foundation continually remind you of the important necessity of upholding our traditionally American attitude of self-help and of maintaining staunchly the institutions that foster it.

Federal tax policy, more than ever, as well as State tax policy, encourage voluntary gifts by individuals to philanthropic organizations including the American Medical Education Foundation.

The services performed in the support of medical science and education are essential to the national welfare and would otherwise have to be financed by taxation.

The cost of contributions is never as great as the actual dollar donation. It always includes the taxes donor would have paid, had he not made the contribution. This is the government's recognition of the public good effected by humanitarian organizations by allowing a tax premium to the public spirited citizens who help maintain our spiritual, charitable and educational institutions.

GIFTS BY INDIVIDUALS

The Internal Revenue Code of 1954 recognizes the desirability of further encouraging substantial personal gifts to charitable organizations by increasing, in most cases, the maximum allowable tax deduction for such gifts. The general limitation in the former law of 20% of adjusted gross income is retained; but an additional 10% may be deducted for contributions directly to specified types of organizations, principally churches, and tax-exempt hospitals and schools. It is apparent that this new provision will encourage personal gifts to all types of charitable organizations.

The new law also provides that in determining adjusted gross income for the purpose of computing the limitation on personal contributions, no deduction need be made for net operating (business and casualty) losses carried back to the taxable year. This reverses the former rule which sometimes operated to disallow in whole or in part deductions for contributions which were within the limitation when claimed but in excess of the limitation after carry-back of a subsequent year's net operating loss.

DEATHS 1953 * AND 1954 MEMBERS OF LOUISIANA STATE MEDICAL SOCIETY

Dr. Paul Thomas Alexander, Shreveport, September 14, 1954.

Dr. Sam Bergman, New Orleans, April 16, 1954.

Dr. Harold Abel Bloom, New Orleans, April 24, 1953.

Dr. Benjamin F. Bremer, Glenmora, September 26, 1953.

Dr. Alfred Ross Brin, Monroe, January 18, 1954.

Dr. James McLain Campbell, Alexandria, 1953.

Dr. Claude J. Champagne, Donaldsonville, May 1, 1953.

Dr. Charles Chavigny, New Orleans, September 27, 1954.

Dr. John H. Connell, New Orleans, March 1, 1954.

Dr. Theodore Allen Dees, Lake Charles, March 26, 1954.

* Not previously reported in Journal of July 1953.

Dr. Joel Pinckney Durham, Pineville, December 9, 1953.
Dr. Joseph Berwick Duval, Houma, December 8, 1953.
Dr. Charles C. Francis, Farmerville, March 24, 1954.
Dr. Wiley W. Gahagan, Coushatta, September 15, 1953.
Dr. William Howard Gillentine, New Orleans, April 16, 1954.
Dr. Roy Bertrand Harrison, New Orleans, July 25, 1954.
Dr. William Marvyn Johnson, Jefferson Parish, August 21, 1954.
Dr. Pierre Jorda Kahle, New Orleans, December 22, 1953.
Dr. Philip P. LaBruyere, Jr., Marrero, January 15, 1954.
Dr. Thomas Latiolais, Sr., Kaplan, December 3, 1953.
Dr. William Samuel Leake, Jr., Lafayette, November 10, 1953.
Dr. Henry A. LeBlanc, Paincourtville, September 30, 1953.
Dr. Walter Edmond Levy, Jr., New Orleans, June 27, 1953.
Dr. Isaac F. Littell, Angola, July 6, 1953.
Dr. James E. McConnell, Baton Rouge, February 2, 1954.
Dr. Joseph W. McKay III, Shreveport, March 26, 1954.
Dr. Urban Maes, New Orleans, March 15, 1954.
Dr. Edwin H. Magee, Jackson, May 21, 1953.
Dr. Robert James Mainegra, Jr., New Orleans, June 14, 1954.
Dr. Abraham Mattes, New Orleans, October 9, 1954.
Dr. Waldemar Rice Metz, New Orleans, July 10, 1953.
Dr. Daniel Joseph Murphy, New Orleans, July 6, 1954.
Dr. John G. Pratt, New Orleans, February 11, 1954.
Dr. Grover DeWitt Rackley, Opelousas, May 1, 1954.
Dr. Samuel Tise Roberts, DeRidder, July 14, 1953.
Dr. William Henry Roeling, New Orleans, May 14, 1954.
Dr. Simon J. Rosenthal, New Orleans, January 31, 1954.
Dr. Thomas Ryan Sartor, DeRidder, September 6, 1953.
Dr. Lee Schlesinger, New Orleans, June 28, 1954.
Dr. Frank C. Sheppard, Mangham, July 20, 1953.
Dr. Glenn J. Smith, Amite, May 24, 1953.
Dr. Marion Sims Souchon, New Orleans, April 2, 1954.
Dr. Thomas P. Sparks, Jr., New Iberia, July 11, 1953.
Dr. Marx David Sterbcow, New Orleans, December, 1953.
Dr. Paul Tilman Talbot, New Orleans, November 11, 1954.
Dr. Henry Oscar Taylor, Calhoun, December 4, 1953.
Dr. Enoch McLain Toler, Clinton, October 21, 1954.
Dr. Rawlin Robert Ward, Bogalusa, 1953.
Dr. Henry Bascom White, Lake Charles, March 21, 1954.
Dr. Charles Tarleton Williams, New Orleans, March 31, 1954.
Dr. Roy Carl Young, Covington, June 12, 1954.

MEDICAL NEWS SECTION

CALENDAR

PARISH AND DISTRICT MEDICAL SOCIETY MEETINGS

Society	Date	Place
Calcasieu	Fourth Tuesday every other month	Lake Charles
East Baton Rouge	Second Tuesday of every month	Baton Rouge
Morehouse	Third Thursday of every month	Bastrop
Natchitoches	Second Tuesday of every month	
Orleans	Second Monday of every month	New Orleans
Ouachita	First Thursday of every month	Monroe
Rapides	First Monday of every month	Alexandria
Sabine	First Wednesday of every month	
Second District	Third Thursday of every month	
Shreveport	First Tuesday of every month	Shreveport
Vernon	First Thursday of every month	

SECTIONAL MEETING AMERICAN COLLEGE OF SURGEONS

The College is holding its first Sectional Meeting of 1955 at Galveston, on January 17, 18, and 19. An exceptionally attractive program has been planned. This meeting is designed for Fellows of the College living in Arizona, New Mexico, Oklahoma, Louisiana, Texas, and their guests.

The six Texas Chapters of the College, representing more than 900 Fellows, have extended

a cordial welcome to the surgeons throughout the Southwest. The hotel and recreational facilities of Galveston assure a pleasant time, as well as one which will be profitable scientifically.

The "Island City" is the home of the large Medical Branch of the University of Texas. Its beautiful new John Sealy Hospital provides unusual facilities for the clinics which form a part of the College program.

Surgeons who are not Fellows of the College may also attend these sessions. (Registration fee, $5.00).

For further information contact Dr. Robert M. Moore, Chairman, Committee on Arrangements, The University of Texas—Medical Branch, Galveston, Texas.

AMERICAN RHINOLOGICAL SOCIETY

Following the meeting of the American Academy of Ophthalmology and Otolaryngology in New York, Drs. Ralph Riggs of Shreveport and Ashton Thomas of New Orleans were invited as instructors in a course, "Introduction and Fundamentals of Reconstructive Surgery of Nasal Septum and External Pyramid" given by Dr. Maurice H. Cottle at the Johns Hopkins Hospital. Course approximated one hundred hours beginning September 25, and ending October 2.

During this course the American Rhinologic Society was founded, Dr. Ralph Riggs being a founder, Dr. Ashton Thomas was invited as charter member.

RESEARCH REPORTS OF L. S. U. SCHOOL OF MEDICINE GIVEN IN MEMPHIS

Seven medical faculty members of Louisiana State University reported on research studies of the LSU School of Medicine at a November medical meeting in Memphis. They were among the speakers at the four-day meetings of the American Society of Parasitologists and the American Society of Tropical Medicine and Hygiene.

A report on the water-borne outbreak of amebiasis in South Bend, Ind., was given by Dean William W. Frye and Dr. R. W. Sappenfield, instructor in pediatrics and public health.

Dr. Henry E. Meleney, research professor of medicine, and Dean Frye presented a re-survey of teaching and research in parasitology and tropical medicine in the medical schools of the United States.

An evaluation of the susceptibility of vaginal parasite infections to medication was presented as the work of Dr. J. C. Swartzwelder, professor of parasitology, Dr. J. G. Mule, research associate in obstetrics and gynecology, Dean Frye and Francis P. Vella, department of microbiology. Dr. Swartzwelder has also cooperated in two other papers which were presented, one on human parasite infection in the United States with Dr. M. Campagna of the Louisiana Board of Health and Dr. E. O. Comer of New Orleans.

The other report dealt with the treatment of a large round parasitic worm and is co-authored by Dr. R. W. Sappenfield and Dr. J. H. Miller, instructor in medical parasitology.

U. S. PUBLIC HEALTH SERVICE ANNOUNCES EXAMINATIONS

A competitive examination for appointment of Medical Officers to the Regular Corps of the United States Public Health Service will be held on February 15, 16 and 17, 1955, at a number of points throughout the United States. Applications must be received no later than January 12, 1955. Appointments available are in the fields of clinical medicine, research and public health. Entrance examinations will include an oral interview, physical examination, and comprehensive objective examinations in the professional field.

Active duty as a commissioned officer with the Public Health Service fulfills the obligation of selective service. Application forms may be obtained by writing to the Chief, Division of Personnel, Public Health Service, Department of Health, Education, and Welfare, Washington 25, D. C. A copy of the applicant's birth certificate and of transcripts covering all undergraduate and graduate education should accompany application forms.

THE NEW ORLEANS GRADUATE MEDICAL ASSEMBLY

The eighteenth annual meeting of The New Orleans Graduate Medical Assembly will be held March 7-10, headquarters at the Municipal Auditorium.

Eighteen outstanding guest speakers will participate and their presentations will be of interest to both specialists and general practitioners. The program will include fifty-four informative discussions on many topics of current medical interest, in addition to clinicopathologic conferences, symposia, medical motion pictures, scientific exhibits, round-table luncheons and technical exhibits.

The Assembly has planned another interesting postclinical tour to follow the 1955 meeting in New Orleans. On Saturday, March 12, a party composed of doctors and their families will leave New York for Europe via Pan American World Airways "President Special". The itinerary includes France, Italy, Germany, Denmark, Sweden and England, and arrangements have been made for medical programs in these countries. The tour ends in England and the group will return to New York, sailing April 7, from Southampton on the "S. S. Liberte", or by Pan American World Airways.

Details of the New Orleans meeting and the postclinical tour are available at the office of

the Assembly, Room 103, 1430 Tulane Avenue, New Orleans 12, Louisiana.

MEETING OF
LOUISIANA HEALTH COUNCIL

The eighth annual committee of the Louisiana Health Council met in Monroe, on November 11 and 12, 1954. Dr. Wiginton of Hammond as President was present and presiding officer. The council lasted two days, and participating were some 20 odd discussants. The theme of the whole meeting was: "Present day facilities to aid the people of Louisiana in carrying out good medical care."

Represented at the meeting were; State Board of Health, State Medical Society, State Department of Education, State dental health, special education program, practical nursing program, nurse recruitment, Parish School health program, Tuberculosis Association Program, Cancer Association Program, Department of Institutions, Agricultural Extension service health program, Department of Welfare Health Outlook, voluntary health insurance, visual screening program, Farm Bureau Federation health program, American Medical Association Resources. Practically every other department of the State was also represented.

Out of state speakers included Dr. F. S. Crockett, chairman of the Rural health Council of the American Medical Association, along with Aubry Gates, field director and Dr. C. C. Henry, director of the Southern district. Mr. H. E. Slusher, President of the Missouri Farm Bureau was the banquet speaker on November 11. His address was on "The independence of Farm People".

The meeting was well attended, and well publicized around Monroe. Many thought it the most satisfactory in years. Louisiana State Medical Society was represented by Dr. Walter Moss, President, and Dr. P. H. Jones, editor of the medical journal. A total of 12 Doctors attended the meeting at different times.

J. P. SANDERS, M. D.
Chairman Rural Health Committee.

BOOK REVIEWS

Mid-century Psychiatry; edited by Roy R. Grinker, M. D. Charles C Thomas, 1951, Pp. 183. Price $5.50.

This volume is a compilation of a symposium held on June 1, 1951, at The Institute for Psychosomatic and Psychiatric Research and Training of the Michael Reese Hospital. It presents a multidisciplinary approach to understanding the progress and present place of psychiatric thought in the mid-twentieth century. The absence of any unitary concept of human behavior and the polyglot nature of interdisciplinary communications is recognized. Viewpoints regarding the modification of human behavior ranging from the strictest mechanistic ones to the more or less pure psychoanalytic tenets are presented in this volume.

The essays are clear, concise, well formulated, and provide the reader with much opportunity for eclectic thought. Particularly noteworthy is the propagandizing concept of Alexander in so ably emphasizing the important bonds between psychiatry and medicine as a whole. Spiegal's closing statement appears to bring out the most important thesis of all of the various writers, and that is the "need for a methodological solution to the problem of the integration of the disciplines contributory to the science of human behavior".

GENE USDIN, M. D.

Atlas of Regional Dermatology; by Ernest K. Stratton, Springfield, Illinois, Charles C. Thomas, 1953. pp. 274, $15.00.

According to the author, "This book is intended primarily for the student who needs visual help in identifying skin diseases." The purpose of the project is very successfully accomplished. Aside from actually seeing a patient with a typical manifestation of a skin disease, a good picture is the next best thing to help a student recognize a dermatological entity. Contributing authors are Drs. Harry L. Arnold, Maurice J. Costello, Lewis A. Koplike and Paul Fasal. Photographs were selected from a rich and varied supply including the collections of such institutions as the Saint Louis Hospital, Paris, the Vanderbilt Clinic, New York, and the University of California Medical Center, San Francisco, California.

The photographs are in the main typical and illustrate the disease intended. Thirty color plates in the back of the text point up the advantage of this type of illustration over the conventional black and white. Altogether there are 596 photographs which include most of the common skin diseases and many of the ones less frequently seen.

There are special sections in the back dealing with leprosy by Dr. Harry Arnold (16 illustrations) and acute infectious diseases by Maurice J. Costello and Lewis A. Koplike (19 illustrations). The common diseases such as psoriasis and lichen planus are frequently illustrated three or four times. There is a very brief discussion of the diagnosis and treatment of each disease as would be appropriate for such a text. All of this material is contained in 288 pages of 8½ by 11 inches, which makes it a less cumbersome book than most atlases. It will be found useful to all

those interested in recognizing dermatological diseases except those with extensive experience and knowledge in the field.

LEE D. MCLEAN, M. D.

Films in Psychiatry, Psychology and Mental Health; by Adolf Nichtenhauser, M. D., Marie L. Coleman, David S. Ruhe, M. D., New York, N. Y., Health Education Council, 1953. Pp. 269. Price $6.00.

It is almost impossible to see all the films currently being prepared in psychiatry, psychology, and mental health. Only persons directly associated with film collections have easy access to them. Therefore, it is especially valuable to have complete descriptions of the sort given in this volume. This is important, for professional people are often asked to furnish information on a film they have not seen. A critical reference is most helpful.

A section on the evaluation of the films, indicates what each purports to show, and assesses its success in doing so. Weaknesses and strengths are pointed out in detail.

This reviewer went through the discussion of films which he has used repeatedly in his own work in mental health education and found new points of view with reference to several films. These involved interpretations, indications of ways in which the films are not representative, failures to suggest solutions, failures to suggest the operation of many forces, and over-simplifications.

A strong bent in the direction of psychoanalytical interpretation appears. One sometimes yearns for explanations in terms of common sense.

There is exact information about buying or renting the films, or securing their use free of charge. Names and addresses of principal distributing agencies are furnished.

The volume is valuable for all persons who use mental health films, particularly for those who may have become casual in their interpretations of their favorite films.

LOYD W. ROWLAND, PH.D.

Holt Pediatrics; by Emmett Holt, Jr. and Rustin McIntosh, 12th ed. New York, N. Y., Appleton-Century-Croft, Inc., 1953. Pp. 1485. Price $15.00.

Those—now few—who were novitiates in the Oslerian era of medicine around the turn of the century will recall several books which were second only to their Gray's Anatomy as indispensable guides to lead them on into and through ever widening and increasingly fascinating curricular fields which their stern but understanding professors required them fully to explore. These books may be said to have been published in a series by D. Appleton and Company and most of them endured long enough to become potent factors in the progress of the branches to which they were devoted. Conspicuous in this series was Osler's Practice of Medicine which appeared in many revisions through the collaboration of McCrae. But none of them were more important as authoritative sources of information than Holt's, The Diseases of Infancy and Childhood. Written originally—and alone—in 1896, by the late L. Emmett Holt, the eminent pioneer who blazed the trail and smoothed the way in American pediatrics, it now appears again 58 years later in its twelfth edition. But this time it is written by 72 authors in addition to the editors, L. Emmett Holt, Jr., and Rustin McIntosh, who have been responsible for revisions since 1926. Prior to that year from 1912 the elder Holt had the collaboration of the late John Howland. So this book has contributed bountifully to American pediatrics, especially in the developmental stage when progress was sometimes disheartening and there were many obstacles which had to be overcome. It is fitting, therefore, that it now appears, still in its familiar red binding but attractively embellished a bit with robin's egg blue emphasizing its new title, Holt Pediatrics, to continue to wield its influence in consolidating what has been achieved and in insuring the orderly development of what will be revealed in the future.

In browsing through the twelfth edition of this book the impression is gained that while it apparently has been rewritten to a large extent the editors have retained most of the plan and format with which earlier readers have become accustomed. Consequently, it is still convenient by the running heads, the center and side headings to locate the information desired without having to read through too much material. The table of contents has been somewhat abbreviated but it is entirely adequate. A thirty page double column index is all that could be desired. Eight pages are devoted in the front of the book to listing the contributors, their scholastic affiliations and the subjects on which they wrote. In addition their initials appear at the end of their articles in the book. It would seem to this reviewer that their names might advantageously replace their initials. This would make it easier for an interested reader to identify an author with whom he may not be familiar, without having to search through the contributors list in the front of the book. The subjects are sufficiently illustrated. The long familiar colored plate of Koplik sots and aphthous stomatitis and the picture of the miserable boy with puffy face and suffused, bleary eyes of many earlier editions, have been retained. This latter picture lucidly illustrates the woebegone appearance which constitutes the typical facies of measles. Once seen it is usually not forgotten.

Nearly one-fourth of this book is quite properly devoted to growth and development, the new-

born infant, peculiarities of disease in children, nutrition and nutritional disturbances and deficiency diseases, as has been the custom in previous editions. This indicates that the editors are still fully in accord with the belief that these subjects are the whole justification for the existence of pediatrics and that there are no better terms to designate them. After all, the deplorable lack of knowledge of these basic subjects was the sole cause of the calamitous mortality rate among infants and young children which demanded the creation of this separate branch of medicine. So the student and practitioner alike will find all the advances, which have been made in these all important subjects, presented so they may be learned with the least amount of mental and ocular effort. The discussion on nutrition is especially commendable because it is refreshing to note that the editors have realized the necessity of showing clearly that there really *is* more to supplying the nutritional requirements in early life than punching a hole in a can of milk and mixing with syrup and water. Besides there are other essentials and all of them will be found under Nutrition in this book.

There is an Appendix of twenty-one pages with growth tables presented in many graphic styles, tables of normal blood chemistry values for infants and children, poisons, and other useful information. More could be included concerning accidents and poisonings since mortality statistics show this to be one of the leading causes of death in the 1 to 5 age groups. Only lead and salicylate poisoning are discussed but the task of editors is difficult and endless, so a line must be drawn. Doubtless, more attention will be devoted to accidents and poisonings in future revisions and it is hoped that the editors will then help to relegate boric acid to its proper place as the active toxic agent in roach poisons instead of as a useless and dangerous substance in nurseries. (Brooke, C. E.: The boric acid problem, Gen. Prac. 7:43 (June) 1953.)

This book will continue to serve as a text book and a ready reference desk book for general practitioners, as it has for more than half a century. There is also much in it that the upper class specialist may not know. It is dedicated to Edwards A. Park, an "Elder Statesman of American Pediatrics"—a fitting tribute to this teacher who has contributed so much to stabilizing the progress of this indispensable branch of medicine. There may be some of those novitiates of an earlier day left, who might like to think of it as a *Festschrift* to its creator even though there may not be any special occasion for it—and maybe the genial Dr. Park would be one of them.

ROBERT A. STRONG, M. D.

PUBLICATIONS RECEIVED

Grune & Stratton, Inc., N. Y.: Myocardial Infarction, by Irving S. Wright, M. D., Charles D. Marple, M. D., and Dorothy Fahs Beck, Ph.D.; Surgical Treatment of Cancer of the Cervix, edited by Joe V. Meigs, M. D.

Julian Messner, Inc., N. Y.: Smoking and Cancer: A Doctor's Report, by Alton Ochsner, M. D.

Prentice-Hall, Inc., N. Y.: Hugh Roy Cullen, A Story of American Opportunity, by Ed Kilman and Theon Wright.

W. B. Saunders Co., Phila.: Urology, Volumes One, Two and Three, edited by Meredith Campbell, with the collaboration of fifty-one contributing authors.

Charles C Thomas, Publisher, Springfield, Ill.: Handbook of Emergency Toxicology, by Sidney Kaye, B. S., M. Sc.; The Mechanism of Labour, by Erik Rydberg, M. D.; The Clinical Use of Corticotropin, Cortisone and Hydrocortisone in Eye Disease, by Dan M. Gordon, M. D.; Hypothyroidism, an Essay on Modern Medicine, by Paul Starr, M. D.

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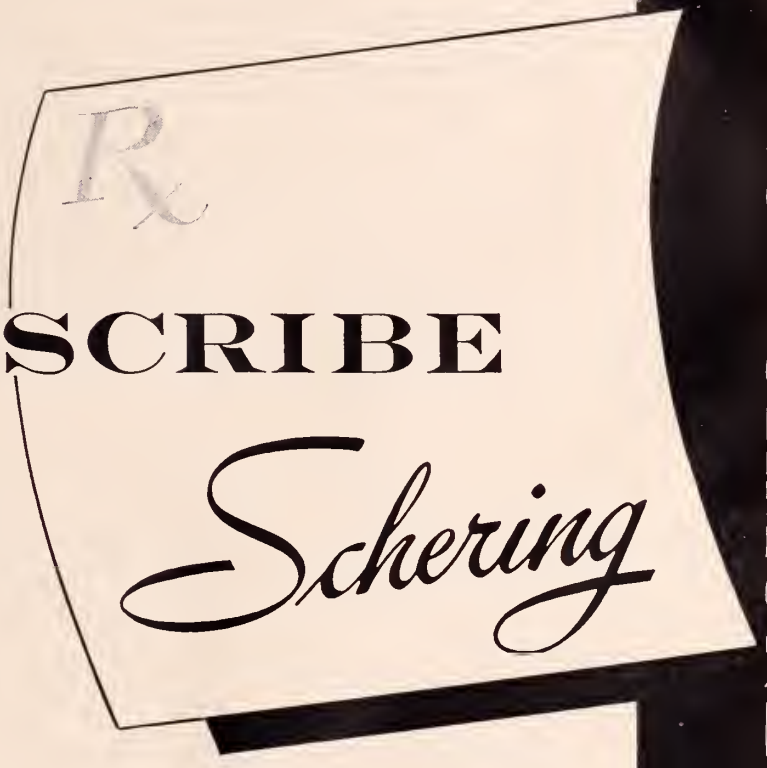


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1. Malleson, J.: Lancet 2:158 (July 25) 1953. 2. Goldzieher, M. A., and Goldzieher, J. W.: Endocrine Treatment in General Practice, New York, Springer Publishing Company, Inc. 1953, p. 23.

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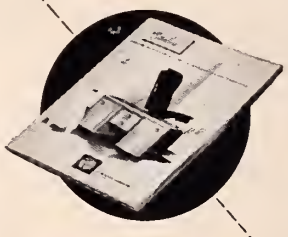
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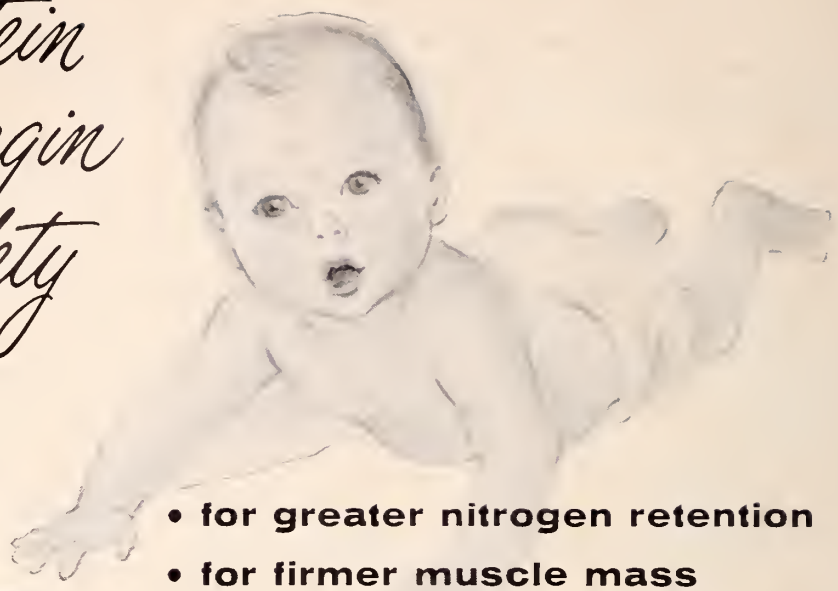
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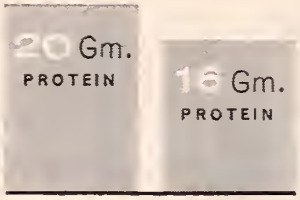


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1. Jeans, P. C., in A.M.A. Handbook of Nutrition, Philadelphia, Blakiston, 1951, pp. 275-298. 2. Stare, F. J., and Davidson, C. S., in The Proteins, American Medical Association, 1945.

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